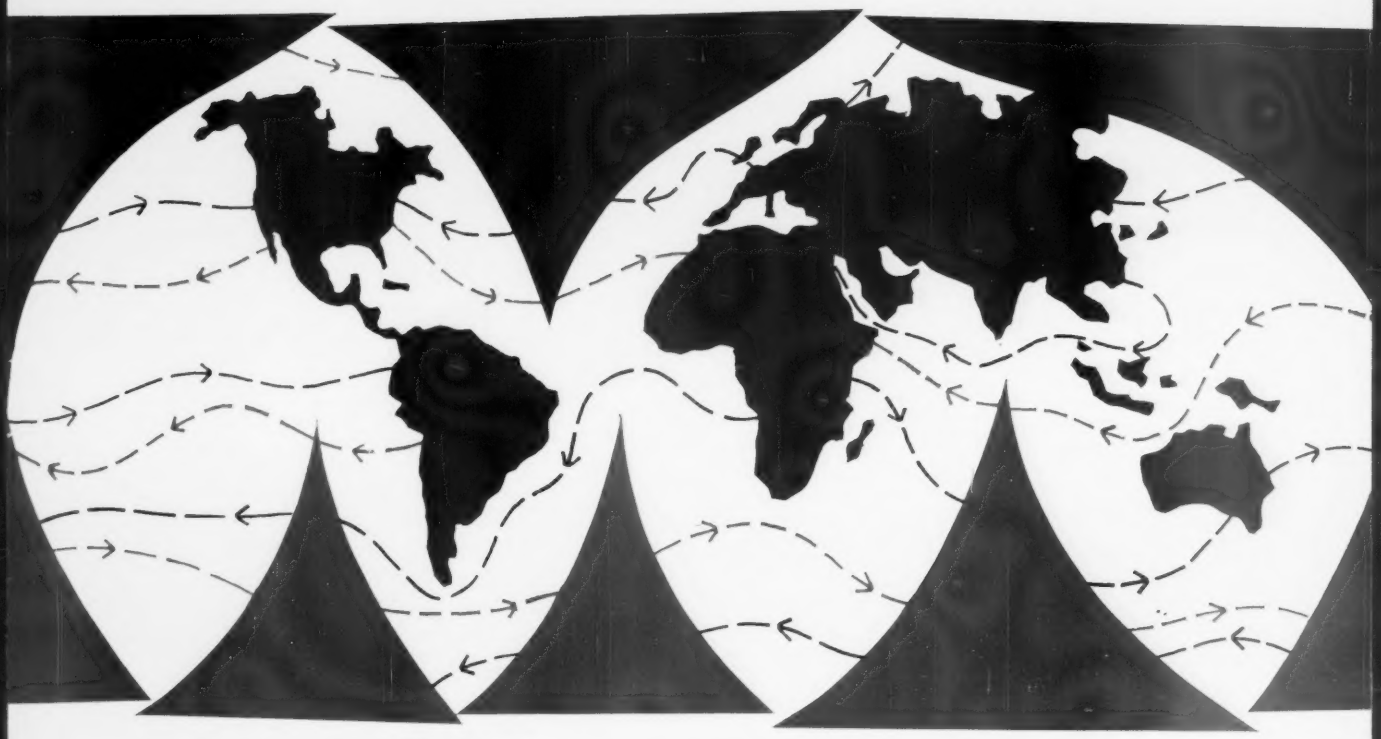
The Magazine of the Registered Professional Engineer

American Engineer

APRIL 1960



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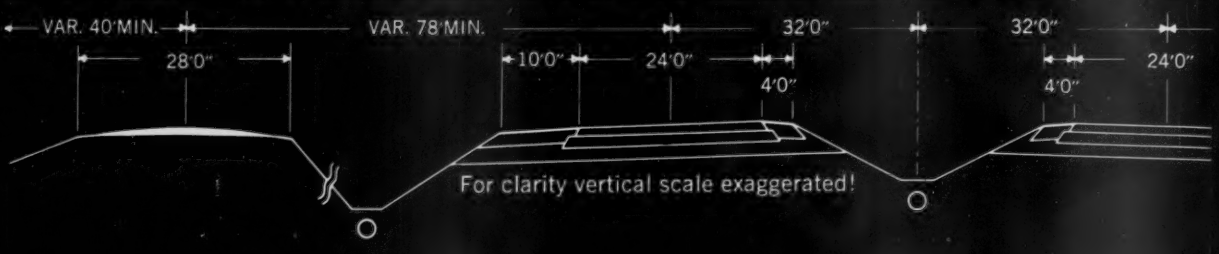

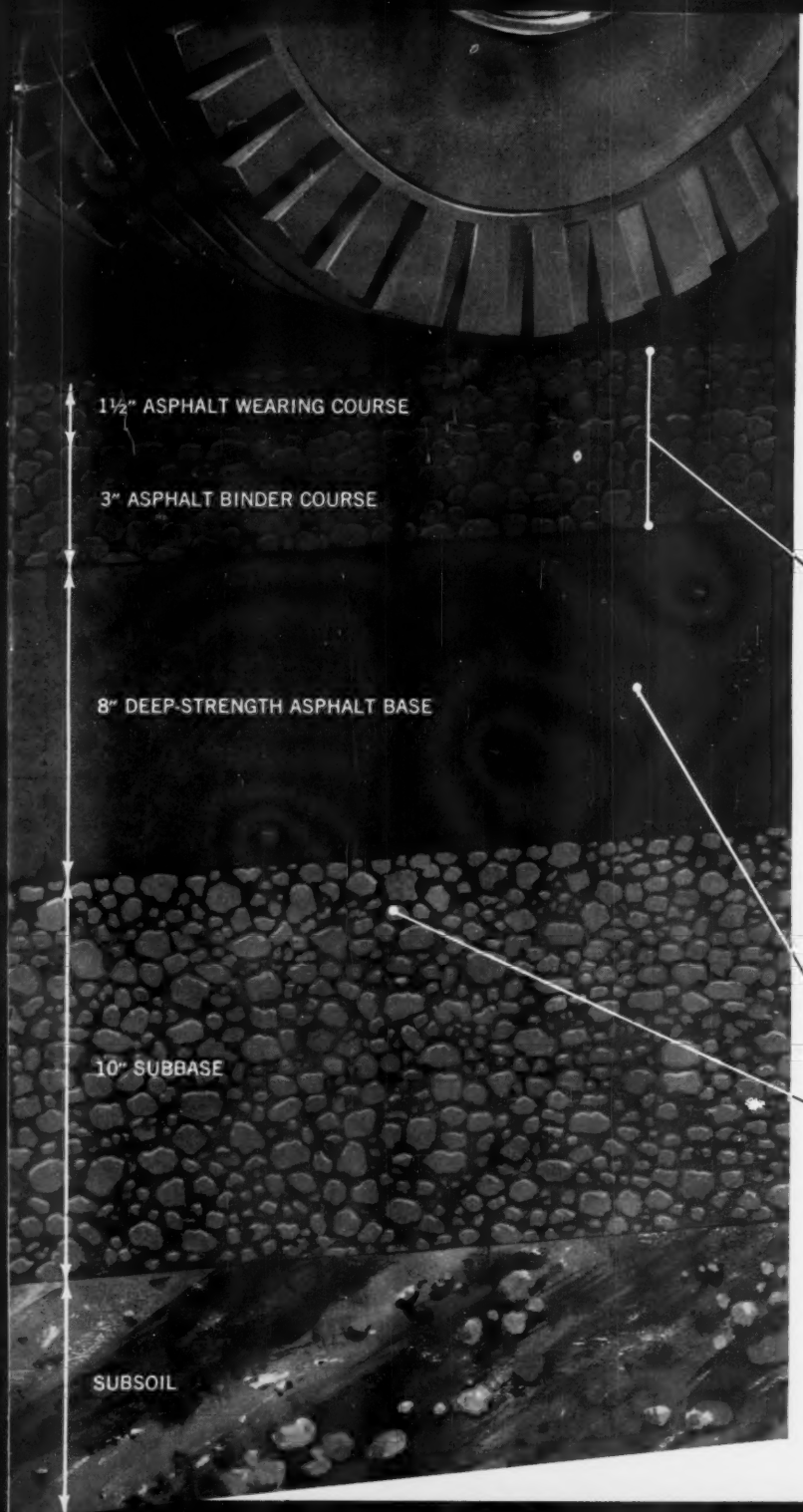

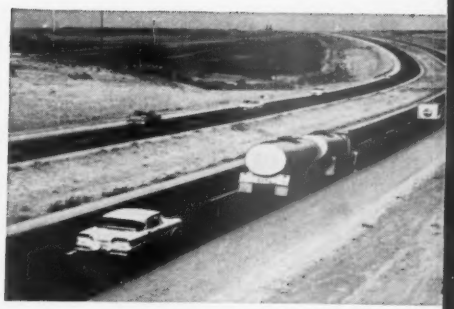

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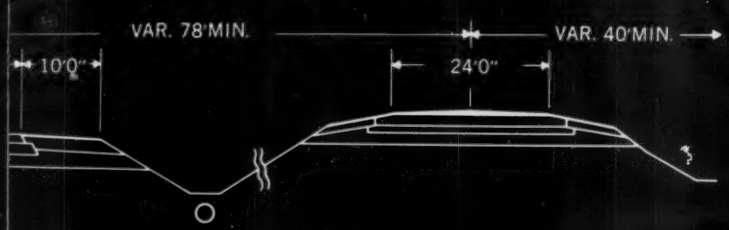

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Letters to the Editor

Likes AE . . .

Dear Editor:

Congratulations!

The quality of the material in the AMERICAN ENGINEER has been improving with every issue. I think you and your staff are to be commended for the ever-increasing number of good articles. . . .

CLIFFORD C. BEMILLER, P.E.
Mansfield, Ohio

On Registration . . .

Dear Editor:

From time to time we read or hear about company executives who are urging their engineering employees to improve their professional status by becoming registered professional engineers. Such news, I'm sure, is most welcome and gratifying to all of us who are already registered. It is a big step in the right direction.

If these same executives and others would so organize their engineering departments that no unlicensed 'engineer'—I feel that no individual should be permitted to call himself an engineer unless he is licensed—could hold a supervisory position they would be rendering a great service to themselves and to the engineering profession as a whole.

There is no doubt in my mind that there are many very capable individuals in engineering positions of a supervisory nature who are not licensed. They would have no difficulty, I feel sure, in obtaining licenses and should do so even though the companies they work for may not require it. But the companies should require it.

There is also no doubt in my mind that there are many so-called 'engineers' in supervisory capacities who just don't have the required knowledge, experience, and, above all, real interest in the profession and would find it very difficult to obtain licenses even if they had the desire to do so. These individuals should be assigned to nonsupervisory positions until such times as they become licensed. Their companies should see to that in all fairness to themselves and all licensed engineers both within their organizations and without.

I feel sure that all our chapters would find it highly advantageous to the profession as a whole to put forth every effort in this direction as it will do much toward putting the engineering profession on a much higher plane. If we don't put forth every effort to accomplish this very important step ourselves we may rest assured that nobody else will.

ROBERT R. DILL, P. E.
Smithtown, N. Y.

Rickover Article . . .

Dear Editor:

You chose wisely in picking an article by Admiral Rickover at this time. But why did you spoil it by introducing him as "sometimes controversial?"

Perhaps you do not agree with Rickover, particularly when he says that "Service ceases to be professional if it has in any way been dictated by the client or employer. . . . Professional independence is not a special privilege but rather an inner necessity for the true professional man, and a safeguard for his employers and the general public. Without it, he becomes . . . a technician."

I think that most of us P.E.'s in industry would agree with this view. And most graduate engineers are in industry. Some organization of the engineers in industry is the big need in our profession. It is even a national need. This is possibly what one of our leading aeronautical engineers had in mind when he said that the great majority of engineering forces are not now making full use of their time and talents. Dr. Theodore von Karman also thinks that the U. S. is in the midst of a technical crisis of which the people are not aware, despite warnings by Adm. Rickover and Edward Teller.

The NSPE has the opportunity, and therefore the duty, to become interested in the progress of the large number of engineering graduates in industry. Along with your Questionnaire on Organization of the Profession, there should be a questionnaire polling the opinions of graduate engineers in industry—as many as we P.E.'s can reach.

Otherwise, P.E.'s in industry who join NSPE will not remain in the organization. It will take more than Mr. Cooper's eloquence to convince us that engineers and engineering-managers belong in the same organization.

Did the National Engineers' Week posters mean that we are happy little ants or does the word "Challenge" mean something?

WILLIAM H. RASER, P. E.
Stratford, Conn.

Industrial Engineers . . .

Dear Editor:

How does the industrial engineer fit into the NSPE? As a newcomer to the profession of industrial engineering and a fairly recent junior member of NSPE (graduated two years ago and joined NSPE in Sept., 1958) I am not asking this question facetiously, but because I would like to know.

I am a faithful and thorough reader of the AMERICAN ENGINEER and of other publications of the NSPE, and I have noticed that most of the contents of these publications are directed towards the interests of members of the older branches of engineering, C.E.'s, M.E.'s, etc. Even in official literature such as the description of the proposed AIEE functional plan for organizing the engineering profession, the founder societies are listed in bold type, and the AIEE is merely lumped in with "other technical societies."

Is such treatment necessary or desirable towards a branch of engineering which is, in my opinion, destined to be one of the leaders in making many new contributions toward the great technological progress of the sixties? We seem to be left out whenever reference is made to engineering or its branches in your magazine, as well as in other written material of the NSPE.

I don't necessarily blame the editorial policies of the AMERICAN ENGINEER or the leaders of the NSPE, who must think of all engineers in formulating their policies. We are a recent addition to the ranks of the profession, and often enough, even our brother engineers, as well as many nontechnical executives, and the general public, do not realize our existence and the many we have contributed to the great progress of the past thirty years in such widely separated areas as airline reservation procedures and hospital operations, production techniques and successful military operations. Perhaps then there are not enough of us making efforts to bring these achievements to the attention of the public and our fellow engineers. . . .

Please do not take this letter as a criticism of the AMERICAN ENGINEER or the NSPE, for I find the one most interesting to read and the other a valu-

(Continued on page 6)

American Engineer

APRIL 1960
Vol. 31, No. 4

NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS
FOUNDED 1934

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The American Engineer is published monthly by the National Society of Professional Engineers, 2029 K St., N.W., Washington 6, D.C., and printed by the National Publishing Company, Washington, D.C. Second Class Postage Paid at Washington, D.C.

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Subscription Rates: $3 per year in advance to members of NSPE and its Affiliated Societies; $4 per year in advance to non-members in U. S. A. and its possessions, Canada and Mexico. Foreign, $5 per year. Single copy, 50¢.

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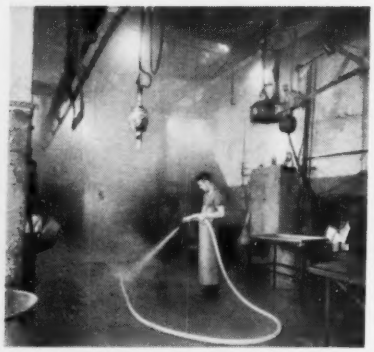

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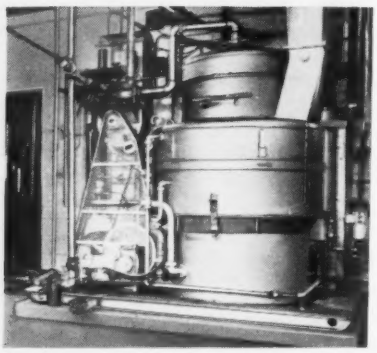

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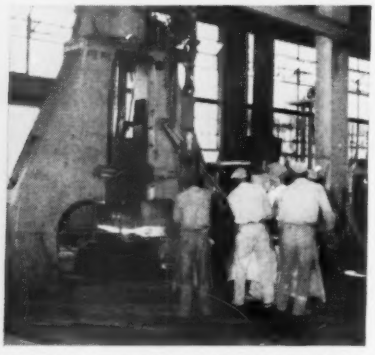

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(Circle 8 in Readers' Service Dept.)

LETTERS

(Continued from page 4)

able organization to which I am proud to belong. I offer my thoughts and questions as a suggestion for broadening the scope of the material you publish and in the hope that other industrial engineers, who are better qualified than I, may be stimulated to submit their own thoughts on this topic to you.

PETER WEISSENBERG, E.I.T.
Drexel Hill, Pa.

Objectionable Ads . . .

Dear Editor:

One of our members noted a television advertisement of a nationwide moving firm which stated that their employees were trained in a company school and became "engineers in the moving business." The matter was referred by the Chapter president to me as chairman of the Law and Ethics Committee for appropriate action. A letter was forwarded to and followed by a personal call on the president of the Dallas office of the moving company. The president advised me that the matter had been forwarded for corrective action to the advertising agency in California which prepared their national advertising. Further that they had no desire to antagonize the engineering profession by improper advertising.

Coincidental with preparing an agenda for a noon meeting of our committee, I noted an article in the *Wall Street Journal* of March 18 pertaining to "pre-testing" of TV programs. The thought occurred to me that some possible contact with the various national advertising agencies by NSPE might be mutually advantageous in eliminating objectionable words or phrases prior to public viewing.

This matter was discussed with our committee which unanimously agreed that the suggestion might have merit. One of the members suggested that the matter not be confined to those agencies preparing TV commercials, but presented to all agencies which prepare advertising for national circulation. This takes on the aspect of a major project. However, there may be societies or organizations similar to our NSPE to which advertising agencies belong that might be receptive to ideas that would benefit their members.

Perhaps NSPE has already covered all avenues in this field, if not, it is

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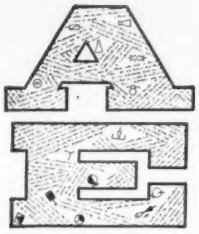

"This Month"

Whatever affects American industry most decidedly affects American engineers, and world competition in many fields has become a matter of concern to many. Therefore, the AE felt a study of the question was in order for its readers, and the resulting report begins on page 19.

Like a new idea? Check "Exchanging Knowledge Through Interlingua," page 24. What is it? Why, un medio plus efficiente e minus costosede intercommunication, of course!

NSPE's P.E. 'Ambassadors' are off to South America. The couple (husband and wife) are Engineers Rodney D. Chipp and Dr. Beatrice A. Hicks, and they were chosen through the Society's "Project Ambassador" project to study the profession in South America. Read how their last day in this country was spent being briefed by Vice President Richard Nixon and others.

And on page 34, a short but thoughtful piece by Terrance W. Ryan, a student at Purdue University. Does engineering pass the six-point test? "Can Engineering Qualify As a True Profession?"

Our "Engineers-At-Work" story "This Month" is "The Engineer in Sales—Human 'Catalyst'," page 36. Which type of engineer should go into sales work? What are the qualifications? Is the work rewarding for a technical man?

Contrary to common belief, union leaders have far from given up on unionizing engineers. Read about their new "blueprint" for action in this late report, "AFL-CIO Conference Maps Engineer Union Plans," on page 38.

To complete this packed issue: Cases from the Board of Ethical Review on page 42, and AE's annual National Engineers' Week roundup, page 45.

Now for the news sections "This Month:"

General. Two good stories: (1) Engineering, Science Roles Misunderstood, GE Head Says, and (2) Teller Contends U.S. Trails Soviet Education. Page 8.

Consulting. Many good stories dealing with the government's study of the use of consultants in the highway program; report of NSPE's study on the salaries on engineers employed by consultants, and the results of an unauthorized practice case in Kansas. Begins on page 9.

Education. Story and photo reporting the recent engineering education symposium in New York City, and another reviewing the new part-time students plan at Boston U. Both on page 11.

Government. The headlines: NYC Engineer Employees Ask Salary Structure Improvement; NSPE Seeks Increase in Per Diem Allowance; Federal Employee Unions Recognized in New Bill, and Conference on Engineering in Space Projects Asked. Begins on page 12.

Industry. A new Department of Labor manual predicts a bright future for engineers, page 14. Also: Stories on how to recruit engineers; a look at the salaries of Britain's engineers, and a Washington, D. C. "title" case.

Registration. Be certain to study the important review here of a case in Maryland where the Baltimore County Circuit Court has reversed the State Board of Registration and ordered a license issued without examination to an applicant for engineering registration. Page 16.

Kenneth E. Trombley

Editor

Engineering, Science Roles Misunderstood, GE Head Says

America's stride into a decade of swift-paced technological advances may be hampered by a "popular misconception of the proper roles of science and engineering," Dr. J. Herbert Hollomon, head of General Electric's General Engineering Laboratory, stated recently.

At a joint meeting of regional engineering groups, Dr. Hollomon asserted that the impact of science has been so great in recent years that scientific discoveries have been dramatically applied to solving the world's technological problems.

This has given the appearance, he said, that the problems of engineering are less important, less demanding and less challenging than science. It has also eclipsed engineering's true role and has had the effect of making the profession less attractive to potential engineering talent.

Science is also the loser, said the general manager, because insistence that it provide practical applications has obscured its proper goal—the search for basic understanding and knowledge. Engineering, on the other hand, he said, is the "application of this knowledge for the purpose of filling human needs."

Noting that "this is a social responsibility which the individual engineer must accept," Dr. Hollomon suggested establishment of a National Academy of Engineering to promote and to strengthen the engineers' contribution to society.

Pointing out that American engineers number about a million, Dr. Hollomon urged that Congress set up an academy on a par with the National Academy of Sciences that would help establish the importance of engineers as people and the importance of engineering to our country.

The proposed National Academy of Engineering would investigate, examine, experiment, and report on any subject of engineering called for by any department of the government, Dr. Hollomon said.

Teller Contends U. S. Trails Soviet Education

Dr. Edward Teller, noted physicist and nuclear scientist, warned educators and industry that this country's schooling for engineers is not equal to the challenge of meeting Russia's accelerated training programs.

Before a group of leading Bay Area educators and industrialists at the awards of Hertz Engineering Foundation scholarships in San Francisco, Dr. Teller declared: "I believe that all of us are underestimating the strength and extent of all the reforms that are going on in Russia and behind the Iron Curtain."

The physicist noted that within the next few years, the Russians will double the number of engineers graduating from technical courses. With the number of graduates already far exceeding ours, "we are not planning anything like that effort," he pointed out.

"I believe," he said, "that our own educational system is good, and is getting better. But, he added that it is not good enough to meet the challenge."

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(Circle 1 in Readers' Service Dept.)

Meetings of Note

Nuclear Congress—Annual Conference sponsored by Engineers Joint Council and other engineering societies, April 3-8, Coliseum, New York, New York.

Building Research Institute — Spring Conference, April 5-7, Statler-Hilton Hotel, New York, New York.

American Chemical Society—National Meeting, April 5-14, Cleveland, Ohio.

American Institute of Architects—Annual Meeting, April 18-22, Mark Hopkins Hotel, San Francisco, California.

Society of Technical Writers and Editors, Technical Publishing Society—Annual Convention, April 21-22, Drake Hotel, Chicago, Illinois.

American Society of Tool and Manufacturing Engineers — Annual Meeting and Exhibit, April 21-28, Statler, Sheraton-Cadillac Hotels and Detroit Artillery Armory, Detroit, Michigan.

American Welding Society—Annual Meeting, April 25-29, Biltmore Hotel, Los Angeles, California.

Legislators in Pennsylvania Study Use of Consultants

To investigate charges by the U.S. Comptroller General that the use of consulting engineers on interstate highway projects is excessive, joint public hearings of the Highway Committees of the Senate and House of the Pennsylvania State Legislature have recently been held.

The Comptroller General's report—covering Maryland, Pennsylvania, and West Virginia—declared that the three states studied "do not appear to have state highway department organizations that are sufficiently manned to meet the requirements of the expanded Federal-aid highway program."

The report evidently based upon 1958 figures noted further that the Maryland highway department organization is staffed to perform only about one third of required preliminary engineering with state forces; that West Virginia can perform about fifty per cent of its workload and that Pennsylvania performs less than ten per cent of its preliminary engineering. The balance of the work in the three states is being contracted with consulting engineering firms.

In answer to the Comptroller General's charges, Pennsylvania Highway Secretary Park H. Martin stated that his lack of engineering personnel can be attributed principally to: (1) the inability of the state to compete with consulting engineering firms on the basis of salaries paid to engineering personnel; (2) the general shortage of engineering personnel available for recruitment, and (3) the lack of job security in certain state highway departments arising from the patronage system of personnel selection.

He said that seventy-six per cent of Pennsylvania's design work is presently done by consultants, and that although he was satisfied with the arrangement at present, his goal for the future is sixty per cent.

Speaking for the consultants was George S. Richardson of Pittsburgh, immediate past president of the American Institute of Consulting Engineers. As a contrast, he stated that engineering costs on the Ohio Turnpike, done by consultants, was considerably less than comparable costs for state-designed work. He cited recent California figures which he said showed an all-staff engineering system spent 24.1 per cent of construction cost on engineering during the period 1953 to 1958.

The Pennsylvania Society of Professional Engineers advised the hearing body that whether the engineering work is handled by staff or consultants it is vitally important to give professional and technical employees of the state some measure of security in their positions in order to compete with other employers, and that all staff engineers should be legally qualified.

In commenting on an earlier study of the engineering needs of the Pennsylvania Highway Department, Carl E. Fritts, vice president of the Automotive Safety Foundation, said that every state highway department should have a "hard core" of its own engineering personnel, and that the proper balance between state design and consultant design in Pennsylvania should be determined by the secretary of highways in accordance with actual conditions and requirements.

Use AE's Readers' Service Department—See Page 57!

Consultants' Engineers Average $9,000 to $9,500

A special tabulation of returns from the recent NSPE Income and Salary Survey discloses the over-all median for engineering employees of consulting firms to be between $9,000 and $9,500. The figures were compiled by the Subcommittee for Engineers in the Employ of Private Practitioners, based on returns from NSPE members for the salary survey. The national median for all engineering employees in the survey was $9,700.

By grade, incomes of engineering employees of consulting firms were: grade 3, $6,600; grade 4, $7,960; grade 5, $9,490; grade 6, $11,450, and grade 7, $14,570. Medians for grades 1, 2, and 8 were not tabulated because of an insufficient return.

The Northeast region was generally higher than others, with medians from $8,250 for grade 4 to $15,250 for grade 7. The Western region was second highest, ranging from $8,200 for grade 4 to $11,600 for grade 6.

A comparison limited to other employee groupings in the NSPE survey show the consultants' employees had an edge over those in state governments, who received a median of $8,530 and county or municipal government, with a median of $8,740. The median for federal employees was $9,840. The over-all median in other categories was: industry, $10,500; public utilities, $9,660; education, $9,980; consulting firms, $10,460, and construction contractor, $11,730.

Unauthorized Practice Halted By Kansas Court

Following an investigation and complaint by the Consulting Engineers' Section of the Kansas Engineering Society the State's attorney general has been successful in obtaining a permanent injunction against an unlicensed individual's

practice of professional engineering.

The defendant had been designing waterworks systems for small communities, a job which is covered in the Kansas engineering registration act as requiring the services of a licensed professional engineer. He did not contest the suit against him by the attorney general.

The situation was described by the Consulting Engineers' Section as "the most flagrant case of unauthorized practice of engineering brought to its attention to date."

Registration Law Makes Engineering Profession

Engineering became a profession upon enactment of the state engineering registration law, an Ohio Court of Appeals has recently implied. Consequently, a contract of an Ohio corporation, organized in 1911 for the purpose of engaging in the practice of consulting engineering among other activities, has been held to be illegal and unenforcible on the ground that the corporation's charter has been modified by the engineering and architectural registration laws which have served to bring the firm's activities within the general statutory prohibition against the corporate practice of any profession.

The court relied heavily upon an Article in the Ohio Constitution which has been interpreted as permitting the legislature to alter or repeal the laws under which corporations are formed, or impose new conditions on the exercise of corporate power.

This significant decision had its origin in a contract by the terms of which the corporation agreed to perform professional engineering and architectural services in connection with the construction of a building. The contract further provided that the owner agreed to pay the corporation a fee of four per cent of the cost of construction of the building, and in the event of the abandonment of the project, the firm was to be paid four per cent of the sum of $160,000, the estimated cost of construction.

When bids for construction of the proposed building were received, they substantially exceeded the $160,000 mentioned in the contract. The corporation then refused to revise its plans and specifications and the owner abandoned the project, refusing to pay the $6,400 fee demanded by the corporation for its engineering services. The corporation filed suit for the fee, but the lower court entered judgment for the owner on the ground that the plaintiff, being a corporation could not lawfully perform professional engineering and architectural services, and accordingly, the contract was unenforcible.

On appeal, the corporation asserted that since its charter was issued by the State of Ohio in December, 1911, the prohibition in the general corporation law against a corporation carrying on the practice of any profession was not applicable to the pursuits of engineering and architecture at the time of plaintiff's original incorporation.

In affirming the decision of the lower court, the appellate tribunal stressed the application of Article XIII of the Ohio Constitution which reserves to the State the power to alter or repeal the laws under which corporations are formed: "It has been held that this provision of the Constitution enters into and is a part of the charter of every corporation formed in Ohio since 1851. So, today, the legislature may alter, or repeal, all acts granting corporate power, it may impose new conditions of its exercise. It can mould the statutes as experience or legislative caprice may dictate."

Consequently, the court concluded that since by the provisions of Article XIII, the State has reserved the right to modify corporate charters by later-enacted legislation pertaining thereto, and since such later-enacted legislation is read into and becomes a part of every corporate charter issued since 1851, "and since a corporation may not carry on the practice of any profession, and since engineering and architecture are now recognized as professions, it follows that the charter of plaintiff has been modified to the extent of making plaintiff corporation legally incapable of lawfully practicing the engineering or architectural professions.

"The contract of plaintiff, as a corporation, provided for the rendition by it of services which it is not permitted to perform under presently existing law. Its contract therefore was illegal and unenforceable." (*H. C. Downer & Associates, Inc. v. The Westate Realty Company*, No. 4892, Court of Appeals, Ninth Judicial District, Ohio, Nov. 25, 1959)

This decision is subject to appeal to the Ohio Supreme Court.

"Let's let it figure the best day for the company picnic."

California Council Lists Activities

The California Council of Civil Engineers and Land Surveyors has been particularly active recently in several areas of consulting interest:

• To help meet the demand for qualified surveyors caused by the post-war construction boom in Southern California, the Council has set up an apprenticeship program in conjunction with a local of the operating engineers' union. The program is expected to take about four years to complete, with five intermediate grades establishing degree of completion. To assure proficiency, each appren-

(Continued on page 52)

Need For Expansion Of Curriculum Cited

Need for curriculum expansion by the nation's engineering schools to mesh with industry's requirements for trained engineers was highlighted at an engineering education symposium held recently in New York City. Need for familiarity with the latest methods of automatic control was also underscored.

Some 200 deans and professors of engineering from colleges in a six-state area joined with industry representatives and federal, state, and municipal education officials to hear a panel of authorities led by Lloyd Slater, head of the Foundation for Instrument Education and Research, tackle one of today's critical challenges.

The symposium, sponsored by Servo Corporation of America, Hicksville, Long Island, electronic equipment developer and manufacturer, pointed up the need for inclusion of practical training by the colleges in the types of modern equipment students will encounter upon graduation. Rapid advances in automation and parallel technologies demand this knowledge by all types of engineers, not just electrical engineers alone, the symposium was told.

Servo Sponsors Forum

Prof. John Warner of Tufts and Prof. John Truxal, left to right, of Brooklyn Polytech look on as Henry Blackstone, president of Servo Corporation of America, demonstrates how Servolab(TM) servo system simulator is used to train students in control systems engineering. Prof. Truxal, one of a panel of speakers at engineering education symposium sponsored by Servo Corp., predicted breakdown of classical electrical engineering boundaries into electrophysics and electromechanics. (See story at left.)

Part-Time Students Offered Degree Plan

Part-time and evening students and persons with full-time jobs will be given their first opportunity to receive a Bachelor of Science degree in an aeronautical engineering design program which will be offered next September by Boston University's College of Industrial Technology.

The program, according to a joint announcement by President Harold C. Case of the University and Dean B. LeRoy Sheley of the College is planned for the student who is working full-time, and will enable him to earn a degree in five calendar years. The course is being offered in cooperation with the Evening-Extension Division.

Classes will be scheduled in the later afternoon and evenings and Saturday mornings on either a two- or three-semester basis, enabling a student to continue at his regular job.

The new program will be identical to the one offered presently in the University's day division which combines broad training in the principles and practices of engineering in all fields with a comprehensive base of liberal arts studies.

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NYC Engineer Employees Ask Salary Structure Improvement

Professional action to improve the salary structure of engineering employees of the City of New York has been taken recently by the Functional Section of Engineers in New York City Public Service of the New York State Society of Professional Engineers.

In a comprehensive statement presented before the City's Career and Salary Board of Appeals, the Functional Section recommended a four-point proposal to provide for: (1) the reallocation and upgrading of top-level engineering positions; (2) an advanced increment step or two for engineering personnel who are assigned added line responsibilities, such as squad or group leaders; (3) the elimination of the three-year longevity waiting period between step 5 and the maximum for each grade, and (4) the assurance, by regulation, that an individual who succeeds to a higher grade by reallocation or promotion shall receive at least one increment higher than any he may have previously held in his former grade.

It was the intent of the Functional Section, in making the statement, to impress upon the board "the present inadequacy of the prevailing salary grades under review and the future impact of such salary levels upon the several engineering services of the City government."

In support of its recommendations, the Section pointed out that a recent analysis showed that salaries paid to engineers in the New York Civil Service, are much lower than those for similar grades in State and Federal Civil Service. In addition, a study of fees and salaries by the New York State Society of Professional Engineers and the Functional Section, based on the 1958 NSPE Income & Salary Survey, reveals that the salaries paid to professional engineers in the city service are less by twenty to thirty-seven per cent than those paid to professional engineers employed in similar categories throughout the country in all fields of endeavor.

The board's attention was directed to the fact that the city is offering, in other areas of employment where practically no educational requirements are necessary, higher salaries than those paid to the engineers who must qualify by baccalaureate degree and experience. This situation was described by the Section as "a sad commentary of the time to find engineers throughout the service supervising personnel in the various categories of labor whose pay is greater than their own."

The Section further noted that the promotion of both young men and the older employee has bogged down under the present Career and Salary Plan. "Recent recruits are seeking reasonable economic advancement within a shorter period of time than in the past, and unless the opportunities and incentives are there, the City is bound to lose them to private industry," the board was warned. "It is the responsibility of this honorable Board and the members of the Board of Estimate to assure the people of the City of New York that the Engineering Service of the City will continue to be among the most qualified and competent body of engineers in the world—not only for the present but for the future as well."

The Functional Section is composed of over two hundred engineering employees of the City of New York and one of its objectives is "To provide for discussion with management on a professional plane to review professional employment developments; and to discuss these employment problems with appropriate city officials, legislative bodies, department heads, etc."

NSPE Seeks Increase In Per Diem Allowance

An increase in the maximum allowable per diem rate to $100 for the intermittent services of experts and consultants has been recommended recently by the National Society to the House and Senate Appropriations Committees. NSPE called the Committees' attention to a recent trend in appropriation measures of setting the per diem rate at $75, or even as low as $50, and urged an increase to "the more realistic $100."

Declaring that Federal agencies are utilizing private professional engineering consultants in an increasing number for tasks which are complex or highly specialized, the Society warned of a possible adverse effect upon the quality of engineering services available due to a reduction in the maximum per diem payment authorized. The net result of a Federal limitation less than $100 could very well be that the most-qualified engineering firms would refrain from undertaking engineering projects for the Government, leaving the Government's choice to less-qualified consultants, NSPE added.

The Committees were reminded of the recent (March, AE) recommendation by the Secretary of Commerce that his department be authorized to procure the services of experts and consultants at a per diem rate of $100, rather than the present limitation of $50.

The NSPE statement also declared that National Society policy and the recommended fee schedules prepared by many state societies of professional engineers have established a $100 per diem rate.

Federal Employee Unions Recognized in New Bill

A new Federal employee labor-management proposal, which would establish by law the official policy that Federal departments and agencies deal with Government employee unions on personnel policy matters and grievances, has been introduced by Representative Randall S. Harmon of Indiana. Mr. Harmon is a member of the House Post Office and Civil Service Committee.

The Harmon bill would recognize the right of officers or representatives of national employee organizations to present grievances on behalf of their members "without restraint, coercion, interference, intimidation, or reprisal." In addition, the bill would require the head of each department or agency to issue regulations which would specify that administrative officers shall, if the unions so request, confer with them on matters of policy affecting working conditions, safety, training, labor-management cooperation, methods of adjusting grievances, transfers, appeals, granting of leave, promotion, demotions, rates of pay and reduction in force.

Disputes resulting from unresolved grievances or from disagreement between the union and the department would be referred to an impartial board of arbitration composed of one representative of the union, one from the department, and one appointed by the Secretary of Labor. The findings of the board of arbitration would, according to the proposed legislation, be final and conclusive. (H.R. 10258)

Somewhat similar legislation has also been introduced by Representatives Bob Wilson of California, Ken Hechler of West Virginia, and John R. Foley of Maryland. (H.R. 10869, 10896, and 10496)

Mr. Wilson, speaking on the House floor, declared that in his opinion the Federal Government could improve its employee relations by "acknowledging the existence of bona fide employee groups and allowing them to officially register their suggestions and ideas for improved employee practices."

These bills would not affect the present prohibition against Federal employee strikes or boycotting activities, but would, according to Mr. Wilson, "recognize that Federal employees for their own mutual benefit be joined together in legitimate groups to present their problems to their bosses and supervisors."

Conference on Engineering In Space Projects Asked

Identical resolutions, introduced by Senator Stuart Symington and Representative Edna F. Kelly, would provide for a Presidential conference of representatives of appropriate institutions of learning for the purpose of making a survey and formulating a recommended plan of action for meeting and solving the engineering and design and other technical problems which can strengthen the U.S. space exploration program.

The resolutions declare that whereas the Government's research program has uncovered requisite knowledge of the basic scientific principles involved in outer space travel, "one of the remaining major requirements to such space exploration is the engineering and design of technical equipment, systems, apparatus and material and their component parts." To solve these engineering problems, the resolutions urge informed research and development, together with ap-

(Continued on page 53)

P.E. Receives Eighth Patent Award

Mr. Sol Domeshek of Great Neck, N.Y., is congratulated by Capt. Edward C. Callahan, commanding officer and director, U.S. Naval Training Device Center, upon receiving his eighth patent award while employed at the Center.

Mr. Domeshek's latest patent, which has been offered to the Government on a royalty-free basis, was for the development of an Optical Radar Simulator. Mr. Domeshek's seven other patents have been for projection, stereoscopic and radar simulation equipment.

A registered professional New York State engineer, Mr. Domeshek attended City College of New York and New York University. He was recently listed in the 10th edition of *American Men of Science.*

He is a member of the National Society of Professional Engineers, The American Society of Mechanical Engineers, the American Society of Photogrammetry, and the Optical Society of America. In August, 1959, Mr. Domeshek attended the 5th International Conference on Optics in Sweden as a representative of the Center.

Left to right in photo above: Mr. Larry Epstein, patent counsel; Mr. Sol Domeshek; Capt. Edward C. Callahan, and Mr. Eugene Nowicki, head of the Center's Audio-Visual Department.

Bright Future For Engineers Predicted in Labor Handbook

A bright future for engineers and related professionals is indicated in the 1959 edition of the *Occupational Outlook Handbook* published by the Bureau of Labor Statistics.

It is predicted that the present rapid increase in technological progress will continue, creating many new jobs in all technical and scientific fields. Engineers will be in greatest demand, with most new jobs expected in the fields of computer technology, rocketry, nuclear energy and electronics. The increasing amount of research and development is also expected to create a higher demand for chemists, physicists, and technicians.

The importance of education is stressed in relation to starting salary and advancement. An engineer with a bachelor's degree is presently able to start at about $5,800 per year. A master's degree ups this figure by $600 to $1,200 per year, with a doctorate commanding from $7,500 to over $10,000 per year.

Experience is also cited as an important factor in earning power. In 1958, the median salary of engineers in industry with ten years experience was about $9,250. Twenty years of experience raises this figure to about $11,200, with ninety per cent earning over $8,100 and ten per cent getting $16,000 or more.

The best places to look for jobs, according to the Department of Labor, are Florida, and the Southwest including California. A close second is the Southeast, with many industries relocating there from the North.

Students, Executives Agree on Hard Work

Contrary to popular belief, getting ahead in business depends more upon what you do than whom you know, according to graduate students and company executives surveyed by two University of Michigan graduate students.

Both students and executives felt that willingness to work hard was the characteristic most necessary for success. Other essential qualities listed were: personal integrity, communication skills, logical powers, self-confidence, adaptability, and understanding of human relations.

The study, conducted by Donald F. Adamski, graduate student in mechanical engineering, and Sheldon C. Glass, graduate student in business administration, was based on the opinions of forty-six selected company executives and 106 University of Michigan graduate students in engineering and business administration.

Engineers tended to rate personal appearance as being somewhat less important than did the business administration students, but this was the only significant difference of opinion between the two student groups.

Placement Officers Say Recruiters Do Good Job

College placement officers feel that most industrial campus recruiters do a good job for their companies but there is still room for improvement.

Of the 139 college placement officers covered in an American Management Association survey, ninety per cent felt that campus recruiters were effective representatives of their companies and 80 per cent said they were good at evaluating students. However, when asked for criticisms of company representatives, the placement officers had plenty to say. Among their comments were:

- Recruiters spend too much time talking and not enough listening. Much information on companies can be presented in written form, and more time should be spent in determining the student's interests and qualifications.
- Specific job descriptions should be presented rather than glamourized generalizations, so that students will not feel imposed upon when assigned menial tasks.
- Recruiters are afraid of the student who is "different" even though he could turn out to be their best bet in the long run.
- If recruiters are not interested in students with less than a "B" average, they should say so.

Britain Loses Engineers Because of Low Salaries

Low salaries at home have been blamed for the loss of British engineers to Canada and the United States.

The British Engineers' Guild,

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representing all fields of engineering, has predicted a steady deterioration in the efficiency of British industry unless earnings are made competitive with those in America.

A recent survey by the British government's Central Office of Information indicated a median salary of only $3,360 for mechanical, civil, and electrical engineers during the 1955-56 fiscal year. Thirty per cent took home less than $2,800 and only one in four received more than $4,480. In contrast the Guild stated that fifty per cent of U.S. engineers of age twenty-five received at least $6,300 during the same period, and for those aged thirty the U.S. median was $7,700.

Company Fined For Use Of 'Engineers' In Name

A Washington, D. C., television repair firm was fined $60 recently for using the word "engineers" in its name. The firm name, TV Engineers, Inc. was said to imply that the firm employed professional engineers in the television field when in reality, only repairmen were employed. The Chief Investigator for the District's Department of Occupations and Professions said the law under which the company was convicted was "passed to keep the value of the word 'engineers' for professional engineers." It has been reported that the company may appeal the decision.

College Computer Training Needed, Industry Claims

College students planning to enter industry should be trained in the use of computers, say companies recently surveyed by Frank R. Hartman of Pennsylvania State University.

Of the 325 companies answering the poll, seventy per cent have computer facilities and indicate a preference for graduates trained in their use. When asked which curriculums should include computer training, the most frequently mentioned, in descending order, were: mathematics, accounting, electrical engineering, business administration, mechanical engineering, chemical engineering, and physics.

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Appeal Entered After Court Orders License Without Exam

- Latitude of Registration Board at Issue
- Directors of Maryland SPE Back Review

The Maryland State Board of Registration for Professional Engineers and Land Surveyors has appealed a decision of the Baltimore County Circuit Court reversing the Board and ordering a license issued without examination to an applicant for engineering registration.

The appellate decision will be significant in determining the latitude of the Board in the exercise of their discretion as to the requirement for an examination. Normally, courts will not upset the decision of an administrative board on matters of discretion within the expert knowledge of the Board. However, the court may intervene if it finds the Board acted in an arbitrary manner.

The dispute arose when the applicant, vice president of a large construction company, submitted a statement to the Board declaring that he is in responsible charge of the work done by forty-eight engineers of one category or another, at least four of whom are registered professional engineers. The statement was supported by written endorsements from the applicant's employer and by statements of other engineers that he is required to exercise engineering skills, ability and judgment. In addition to the references furnished as to the applicant's ability, he also supplied the required references as to his character and reputation. The Board, however, refused to grant a license unless the applicant could successfully complete the required examination. The applicant then appealed to the circuit court, seeking to have the Board's action reversed.

Agreeing with the applicant's position, Judge John E. Raine, Jr., declared that the Board had tended to overemphasize the creative work referred to in the Act, and had placed too much stress on the question of the evidence that a man is actually engaged in the designing and creating phase of engineering work. "Now," the Judge said, "the Act defines practice of engineering to be a great deal broader. It doesn't mean just creative work; it means any professional service, and that includes supervision of construction for the purpose of assuring compliance with specifications and design in connection with any public or private utilities structures, and so forth."

Judge Raine further stated that being in responsible charge of the work done by forty-eight engineers "certainly seems to me to be professional service that requires engineering education and experience. It seems inconceivable to think that a man could be in responsible charge of forty-eight engineers and supervise their work in connection with large projects such as are described in the statement without rendering professional service."

Referring to the endorsements of the applicant's good moral character, the judge stated that "I cannot conceive of these men stultifying themselves by recommending a person for registration as a professional engineer if they thought that public health, safety, or welfare would be endangered by foisting onto the public as a professional engineer, somebody unqualified. If those engineers are capable of stultifying themselves to that effect, then the engineering profession is in such bad shape that the most diligent efforts of the Board of Registration for Professional Engineers is not going to save the public."

The judge accepted the argument of the applicant's attorney that his enlarged duties and responsibilities over the years had necessarily turned his professional activities away from design and creative drawing. The judge added that, in his opinion, the Board has "unjustifiably" made this type of activity "an absolute prerequisite of the granting of a license."

Judge Raine then went on to declare that "it may have been more desirable for [the applicant] to have taken the examination and perhaps he could have established his eligibility in that fashion without resorting to this litigation, but I'm unwilling to infer from his unwillingness to take the examination, any incompetence or disqualification on his part." The judge added a personal note saying, "I frankly would be horrified at the thought of having to face the Board of Law Examiners. I'm afraid the result would be tragic."

In conclusion, the judge declared that "I'm not giving [the applicant] a license just because he wants to be proud of having the certificate on the wall. I believe that there is substantial evidence in this record that meets the definition set up by the statute, and for the Board to have given either no weight or insufficient weight to that evidence, is legally unjustified and legally arbitrary, and I believe that it's perfectly proper to reverse the Board * * * so I'll pass an order reversing the action of the Board and requiring the issuance of the license of certification."

The Board of Directors of the Maryland Society of Professional Engineers has voted to support the Registration Board in its appeal. (*Ruth* v. *Coffin, et al.,* Circuit Court for Baltimore County, February 9, 1960.)

Strictly Business

Personalities . . . The appointment of **Richard S. Grant** as chief engineer, Eastern Division, of **Owens-Corning Fiberglas Corporation** has been announced by **Benjamin E. Boyd,** vice president-manufacturing. At the same time, six other appointments in the General Engineering Department of the Division were announced. **W. R. Steitz** has been named textile products process equipment engineer with headquarters in New York City; **J. R. Thumm** has been appointed general products process equipment engineer with offices in Toledo; **H. O. Youngquist** is buildings and utilities engineer with headquarters in Toledo; **R. P. Witschen** becomes construction engineer with offices in Toledo; **J. D. Knerr** is planning engineer with headquarters in Toledo, and **W. C. Nugent,** equipment engineer, will be located in Newark, Ohio. . . . **Theodore R. Richardson** has been named manager of the Engineering Department of **Bowen Engineering, Inc.,** North Branch, N. J. . . . **George F. East** has been promoted to chief engineer in the Dynamics Division of the **Clark Corporation,** San Gabriel, Calif. . . . **Harlow J. Reed** has been appointed vice president for engineering of **Olin Mathieson Chemical Corporation,** New York, N.Y.

Mr. Grant

Tim Ho, formerly Hawaii's superintendent of public works, and **Sam O. Hirota,** who had been serving as assistant superintendent, now fill the first and second spots, respectively in the State's newly organized Department of Transportation. Both men are engineers. . . . **Henrik Ring** has announced the opening of **Ring Engineering,** Tarzana, Calif. . . . The appointment of **Titus G. LeClair** as manager of nuclear power applications for **General Dynamics Corporation's** General Atomic Division, San Diego, Calif., has been announced. . . . **Wilfred H. Tock** has been appointed to the engineering staff of the Traylor Engineering and Manufacturing Division of **Fuller Company,** Allentown, Pa. . . . Formation of the consulting engineering firm of **Emil F. Vranics and Associates, Inc.,** Milwaukee, Wis., has been announced. . . . **Forrest and Cotton, Inc.,** Dallas, Tex., have announced the election and promotion of **George M. Parker, Jr.,** and **C. L. Shimek** as vice presidents of the firm. . . . **W. H. Buchhagen,** president of **Bucknell Engineering Company,** Pittsburgh, Pa., has been elected president of the Pennsylvania Association of Consulting Engineers.

Mr. Ring

John D. Powell has been transferred within the **General Services Administration** of the Federal Government from Atlanta, Ga., to Washington, D. C. He is serving as supervisory electrical engineer of the GSA-Central Intelligence Agency project near McLean, Va. . . . **Robert R. Wagstaff** has been elected engineering vice president and a director of **United Engineers & Constructors Inc.,** Philadelphia, Pa. . . . **Lester D. Lee,** president of the firm of **Hitchcock & Estabrook, Inc.,** Minneapolis, Minn., announces the firm's expansion and entrance into the electronics consulting engineering field. . . . **John S. Shapland** has been appointed chief engineer of the **C. S. Johnson Company,** Champaign, Ill., a division of the **Koehring Company.** . . . **Ralph A. Larsen** has been named chief design engineer of **Stone & Webster Engineering Corporation,** it has been announced by **M. H. Cutler,** vice president and engineering manager. . . . **William F. Devenney** has joined the engineering staff of the Philadelphia, Pa., office of **Water Service Laboratories, Inc.** . . . **Norman J. Smith** has been appointed chief engineer of the Instrument Division of **J. E. Lonergan Company,** Philadelphia, Pa.

Mr. Wagstaff

Carl Thaller has been named an associate of **Samborn, Steketee and Associates, Otis & Evans,** with headquarters in Toledo, Ohio. . . . **William J. Suchors** has been appointed coordinating director of engineering and product planning for the **Remington Rand** Univac Division of **Sperry Rand Corporation,** New York, N.Y. . . . The **Skilken Company,** Columbus, Ohio, has been formed to promote the combined services of the **Morris Skilken Construction Company, Inc.,** and the recently formed **Skilken Engineering Associates. Morris Skilken** is president of the new firm. . . . **Henry C. Guhl** has been elected vice president for engineering by the board of directors of the **National Vulcanized Fibre Company,** Wilmington, Del. . . . **A. Bruce Onderdonk** and **Robert P. Lathrop** have announced the establishment of **Onderdonk & Lathrop,** Consulting Engineers, Glastonbury, Conn.

Mr. Guhl

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(Circle 6 in Readers' Service Dept.)

What Can America's Industry and Its Engineers Do in the Face of a New Threat?

How World Competition Affects U.S. Engineers

Many persons believe the U.S. must launch a more vigorous export program to meet the growing competition for world markets. Here a lightweight trolley bus is loaded for shipment to Brazil.

THIS winter a new American-made product—the small car—appeared in automobile showrooms in large numbers for the first time.

The words small, compact and economical suddenly became a part of the vocabulary of an industry that has long been selling power, size and glitter.

Why the sudden switch in thinking by the Detroit automobile giants? That well worn phrase "foreign competition" probably accounts for a large share of the answer.

With some notable exceptions—the American Motors Rambler, in particular—the U.S. automobile industry had continued to turn out bigger and bigger vehicles while the pert little Volkswagens, Renaults and Fiats and other European models poured into the country. Finally alarmed at the sizable dent the imports were making in the domestic market, the big three of the automobile industry turned its engineers loose to design a compact car that could compete. Off of these engineers' drawing boards came this year's Falcons, Darts, Corvairs and Valiants.

The experience of the automobile industry has served to dramatize a growing problem for many American concerns—how to meet the increased competition of foreign-made products both at home and abroad.

The answers to the question are complex and certainly they vary greatly from industry to industry and many times are tied into the general problem of international trade policies.

However, essentially American industry today finds itself in a new era of international trade. The U.S. is no longer the only big source of mass produced manufactured goods. The improved industrial positions of Western Germany, England, Japan and to a lesser degree Italy and France are making important and sizable contributions in the trade channels of the world. And this boils down to more competition for the American engineer and his principle employer, U.S. industry.

Testifying before the House Ways and Means Committee on the Foreign Investment Incentive

Improved production methods like automation lower American costs and make products more competitive on the world market. U.S. engineers face more and more difficult challenges as other countries refine their own production techniques.

Act, John T. Nolan of the Tyler Refrigeration Corporation of Niles, Michigan, summed up the country's changing trade situation like this:

"All too few Americans realize that for some time the United States has been entering a new era in foreign trade relations. Since World War II, Americans have had it practically all their own way in filling what seemed an almost insatiable demand for goods of all descriptions by foreign countries. Naturally this was so as the United States was practically the only source of supply. . . . With credit to UNRRA, the Marshall Plan and sound fiscal policies of an internal and bootstrap lifting nature most of the war-torn countries in Western Europe and Asia have now been reconstructed and with their productive capacities in many lines of goods being . . . more than adequate to meet home consumer demands. They have been reaching out and making substantial inroads in the field of international trade."

It takes no trade expert to spot the growing competitiveness of foreign products in American marketplaces. Walk into almost any store and there will be one or more products from Europe or Asia on the shelves—transistor radios, typewriters, clocks, watches. . . .Viewed against the background of our exports of manufactured goods, these growing imports are not serious, but they unquestionably cause major headaches for specific industries.

For example, manufacturers of American transistor radios are becoming alarmed at the tremendous increase in the number of Japanese transistors being poured onto the U.S. market. Speaking through the Electronic Industries Association, the group went so far earlier this year to ask the government to consider increasing tariffs on the Japanese product. They based their plea on a contention that the flood of lower-priced foreign transistors could possibly drive U.S. transistors out of business and leave the country without an adequate supply of the radios in the event of a national emergency. The transistors are important components in small radios and are used widely in space vehicles.

The U.S. imported more than two million Japanese transistors during the first half of 1959. Three years before—1956—only 368,000 of the Japanese products found their way into the American market.

Mention the import-export problem and someone will almost certainly jump up with a cry for higher tariffs to protect American products. It is true that tariffs do apply to a number of products with special problems, but the trend today

Imaginative design and innovation—long a trademark of U.S. engineering—may hold the key to making American products more competitive. Revolutionary designs and innovations, many trade experts believe, will make American products attractive to foreign buyers even if they carry higher price tags than the home-manufactured items.

is towards freer trade with a minimum of tariff restrictions. Opponents of high tariffs contend that these artificial walls simply invite retaliatory measures by foreign governments, and, thus, worsen the trade situation.

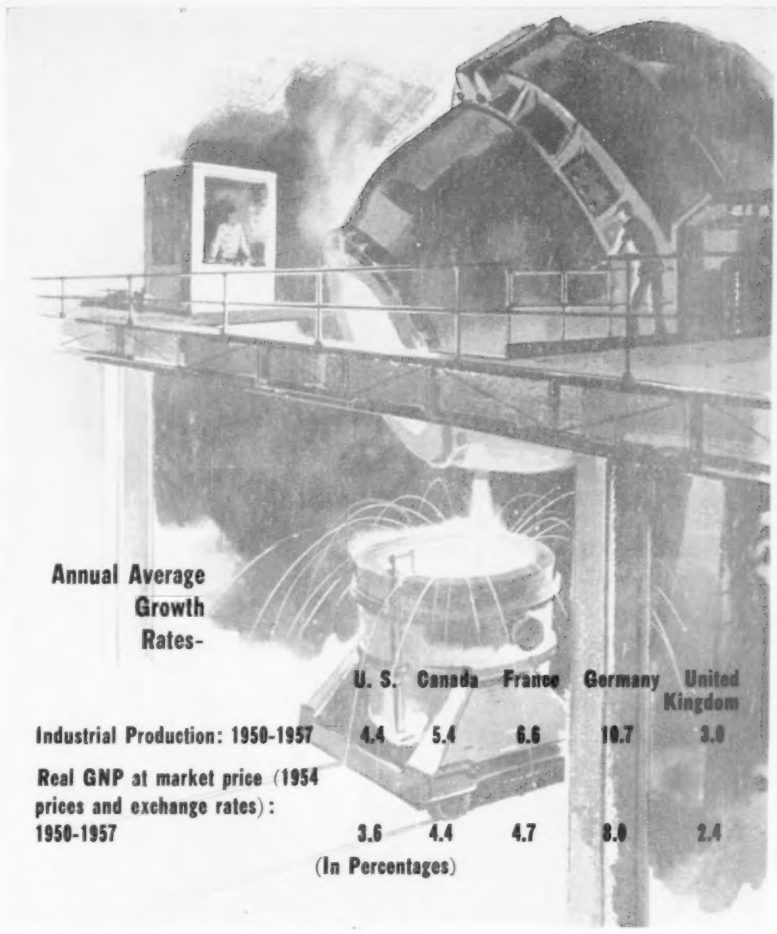
There also is the basic principle that foreign governments must be able to sell their products if they are going to be able to buy ours. So, generally, U.S. industries must meet this foreign competition without any great help from governmental tariffs.

This presents its problems, especially in view of the fact that the prices of American made products invariably reflects this country's high standard of living. Many trade experts are less concerned about the imports than they are about the deteriorating position of U.S. exports in the world market.

What is the answer? There is, of course, no single panacea to this complex problem, but increasingly trade groups and some businessmen are talking about the necessity of instilling more competitiveness in the American products. No longer, they contend, can American industry expect products fitted solely for the U.S. market to find wide acceptance in the increasingly competitive world markets. U.S. industry must become more export-minded and design its products for the particular foreign market it wishes to capture. Innovation, ingenuity, and imagination —the ingredients which have made the domestic economy so envied— now need to be turned loose for the export field. Ingenuity in product design apparently can do much to overcome any price differentials.

A leading business publication, *Business Week*, which has followed the problem of foreign competition closely, took cognizance of this new trend in its special "Shape of 60 Issues."

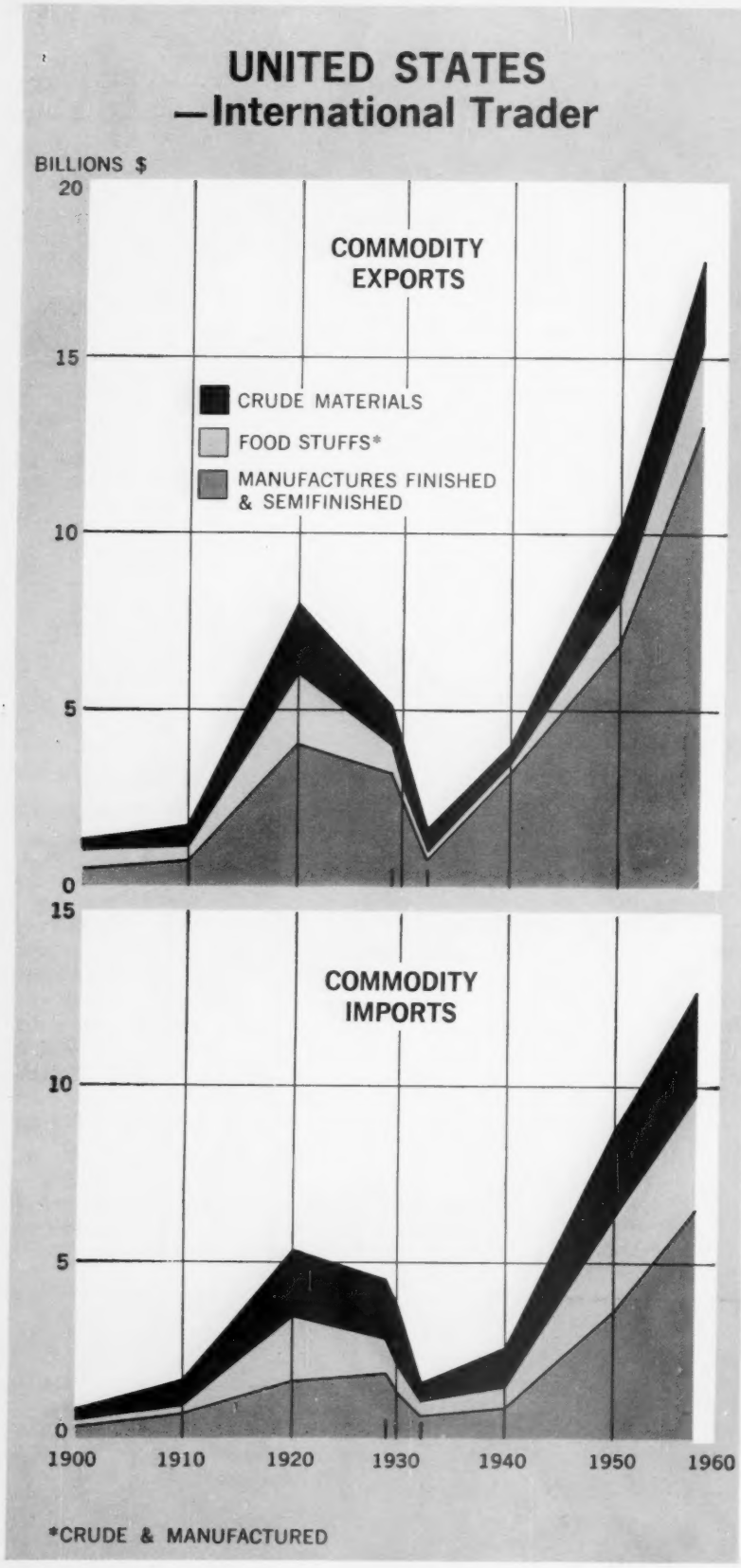
". . . Commerce Department officials and even businessmen . . . are talking up innovational exports as the future trend for exports," the magazine said. "If U.S. industry can't always produce quality at the same price as foreign industry, it can create new tricks and truly revolutionary designs for products. Foreign companies and consumers readily admit this."


Annual Average Growth Rates-
U. S. Canada France Germany United Kingdom
Industrial Production: 1950-1957 4.4 5.4 6.6 10.7 3.0
Real GNP at market price (1954 prices and exchange rates): 1950-1957 3.6 4.4 4.7 8.0 2.4
(In Percentages)

It is here in the area of product design, innovations, and revolutionary methods that the responsibility falls heavily on the shoulders of American engineers.

The American Society of Industrial Designers heard a great deal of this talk during its meeting in New York last November. In one of the major addresses, R. Harvey Whidden, vice president in charge of marketing of the Bulova Watch Company, said that the best way American industry can meet the challenge of foreign competition it to "go back to work." "There's too much fiddling around, and what might be called narcissism on

Foreign competition has been particularly noticeable in the automobile industry. This year, American manufacturers put out their own versions of compact cars to meet competition from such popular foreign models as Volkswagens, Fiats and Renaults.



the part of the manufacturer. . . . What has happened to the urge to compete and the willingness to get down to work?"

Apparently many American engineers and industries are already hard at work in meeting the demands of the new competition.

One example cited by the *Business Week* survey was that of Singer Manufacturing Co. which has doubled its outlays for research and development in the the last three years. At the same time its plant at Elizabethport, N.J., has undergone a major overhaul for more automated and efficient production. The survey also noted that companies like Eastman Kodak have been able to hold their positions in the markets through mass production methods and aggressive new product development. And photographic equipment probably has as stiff a foreign competition as any product.

The machine tool industry, too, faces substantial competition in the fight for world markets. But, here again a little engineering and marketing imagination is apparently saving the day for many companies. A Midwest machine tool maker recently revealed that it had been able to sell more than one-fifth of its 1959 volume overseas through the creation of improved special purpose tools, especially for the growing foreign automobile industry. At the same time, small standard tools, the kind that can be duplicated almost anywhere apparently are feeling the pinch of foreign competition.

Even small industry may be able to utilize improved production methods and product design to great advantage in combatting foreign competition. The *Wall Street Journal* only last month recounted the experiences of a Michigan fishing tackle manufacturer who has turned automation and design into effective weapons against stiff competition from Japanese-made fishing reels.

Automation and other improved production techniques have enabled the company to cut its prices and at the same time, thanks to increased production, keep its work force intact. Its design department has been increased by a third to keep a steady stream of new mod-

els on the market. The result: the company's sales increased by twelve per cent despite the fact that fishing tackle sales nation-wide decreased by four per cent last year.

But, the automobile industry probably has the best known story of foreign competition. In 1955, the Detroit automakers were shipping four times as many automobiles out of this country as foreign manufacturers were sending here. By 1958, the trend had been completely reversed—there was almost four times as many foreign cars brought into the U.S. as there were U.S. vehicles shipped abroad.

FACED with this small car invasion, the big three of the U.S. automobile industry started turning out their own versions known as the compacts. It is too early yet to predict the over-all success of the new lines, but the American compacts are believed to have already taken the edge off of, at the least, the higher priced imports. The U.S. small cars, likewise, may regain some of the U.S. export market.

One of the most highly publicized cases of foreign competition was Britain's successful bid to furnish a giant steam-turbine generator to the Tennessee Valley Authority. The British firm underbid U.S. companies by several million dollars and was awarded the contract despite a hornet nest of protests that arose in this country.

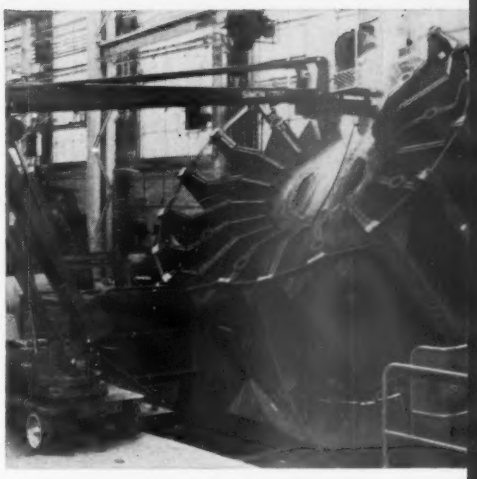
Foreign competition, however, is not all bad. Overseas competition, like domestic competition, sometimes tends to sharpen industry and make it reach out for more imaginative ways to market its products. The automobile industry is an example. It is doubtful that the American public would have been treated to such a wide range of small cars this year, if it had not been for the spur of successful competition from foreign vehicles.

Congress' Joint Economic Committee took a somewhat similar tack in its report released last month:

"An increase in competition from abroad can be and often has been a healthy stimulus to American producers to modernize their technology, increase their efficiency and hold down their costs and prices."

But, as the Committee conceded, the adjustment to foreign competition poses serious problems in some industries. In some cases, the maintenance of tariffs may be the only immediate solution.

Generally, American industry must live with increasingly stiff competition for both its domestic and foreign markets. How well it is able to live with this new fact of life apparently depends greatly on the imagination and skill of the American engineer.—**End.**



American manufacturers are finding out they have no monopoly on efficient production techniques. Here a British company demonstrates a hydraulic platform which is used in solving problems of industrial inaccessibility in that country.

More and more imports are being brought into this country to compete with American-made products. Imports in many fields have been increasing more rapidly than has our export trade in recent years.

Mass production methods, many of them pioneered in the U.S., are now being used successfully in many countries of the world. Many countries, their industrial capacity destroyed in World War II, are now recovered and are becoming strong competitors with the U.S. in world trade.

EXCHANGING KNOWLEDGE THROUGH INTERLINGUA

by Forrest F. Cleveland

Department of Physics
Illinois Institute of Technology

Editor's Note: ***The column on the left below is written in Interlingua. The column on the right, and the remainder of this article, is, of course, in English. Compare the two columns below. Can Interlingua become an "International" language for the exchange of ideas between the world's engineers and others?***

Quando aeroplanos con propulsores es reimplaciate per aviones de jecto, e illos in lor torno forsan per rocchettas, le numero de contactos inter le populos de differente paises es naturalmente accrescite. E quando le numero de contactos es assi accrescite, le necessitate de un medio de communication inter personas de partes differente del mundo deveni justo a ille extento plus urgente.

Le tempore—si jammais il habeva un tal tempore—quando ingenieros e scientistas poteva expectar passar lor vitas a lor homes sin incontrar gente qui parla un differente lingua ha attingite su fin. Delegationes de assistentia technic nunc va a omne partes del globo, le interesses de companias de petroleo (e altere companias) nunc es mundial, e le frequentia de assembleas international cresce.

Sub iste conditiones, il non essera possibile pro longe evitar le uso de un medio plus efficiente e minus costose de intercommunication.

A parte le medio de communication oral durante contactos personal, il ha le problema de obtener informationes ex le litteratura de ingenieria publicate in jornales in varie partes del mundo. Quando un scientista o ingeniero comencia un projecto de recerca o disveloppamento, le prime passo es trovar lo que jam ha essite facite super le subjecto. Isto es difficile proque le informationes necessari es publicate in si multe linguas, e nulle scientista o ingeniero pote leger criticamente le articulos in omne iste linguas. Consequentemente, ille debe fider se al jornales de summarios o debe obtener un traduction de multe articulos. Traductiones es difficile e costose a obtener e frequentemente contine errores que resulta ex le infamiliaritate del traductor con le materia.

When aeroplanes with propellers are replaced by jet planes, and these in their turn perhaps by rockets, the number of contacts between the peoples of different countries is naturally increased. And when the number of contacts is thus increased, the need of a medium of communication between persons of different parts of the world becomes to just that extent more urgent.

The time—if ever there was such a time—when engineers and scientists could expect to pass their lives at their homes without encountering persons who speak a different language is at an end. Delegations for technical assistance now go to all parts of the globe, the interests of petroleum companies (and other companies) now are world-wide, and the frequency of international assemblies is increasing.

Under these conditions, it will not be possible for long to avoid the use of a more efficient and less costly medium of intercommunication.

Apart from the medium of oral communication during personal contacts, there is the problem of obtaining information from the engineering literature published in journals in various parts of the world. When a scientist or engineer begins a project of research or development, the first step is to find that which has already been done on the subject. This is difficult since the necessary information is published in so many languages, and no scientist or engineer is able to read critically the articles in all these languages. Consequently, he must trust himself to the journals of summaries or must obtain a translation of many articles. Translations are difficult and costly to obtain and frequently contain errors that result from the unfamiliarity of the translator with the material.

(Continued next column)

Then there is the delay. At the time when the translated article arrives, its importance for the research in question frequently has vanished.

As a consequence of the language barrier, thousands of dollars now are expended in a duplication of research already done elsewhere. Recently, for example, the United States National Science Foundation reported that a group of American laboratories spent five years and more than $200,000 in research on a problem in electrical circuits, only to discover after the conclusion of the work that this had been done many years ago and that the results had been published in another part of the world.

It is clear that a more rapid, more efficient, and less costly progress would be made if the publications of science and engineering would use a common language. But which language?

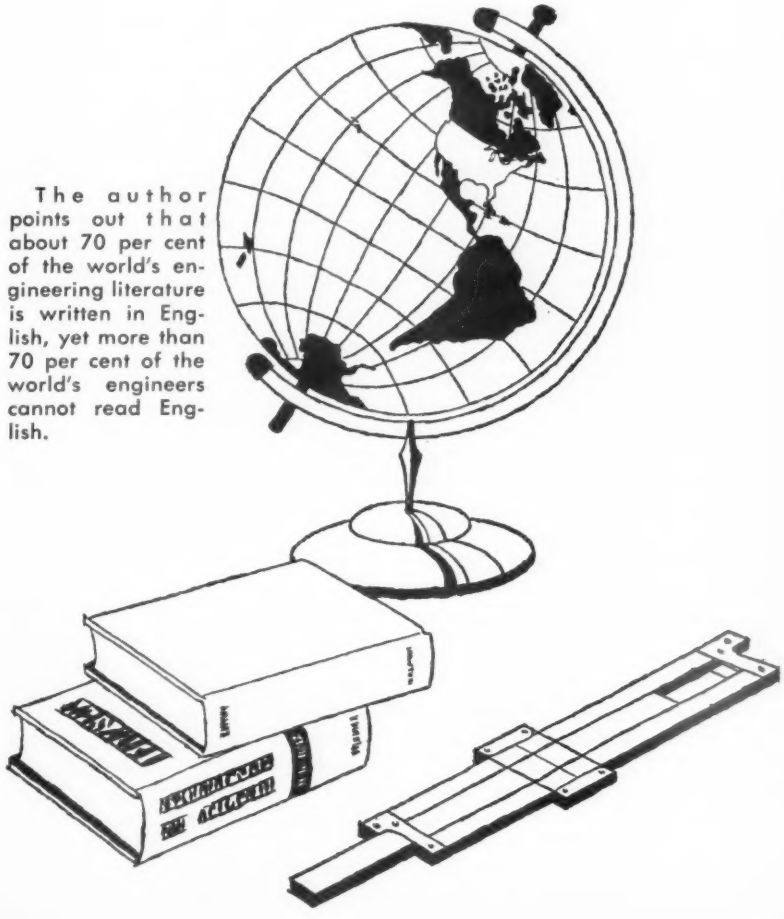
The normal reaction of an engineer who speaks English would be: "Why not English?" It is true, as the recent report of UNESCO on "Scientific Translation and Other Aspects of the Language Problem" says, that "about 70 per cent of the engineering literature appears in English, but," the report proceeds to say "more than 70 per cent of the professional engineers of the world are not able to read English and a still greater percentage of the engineers who are able to read English are not able to read the scientific literature in other languages. In other words," the report concludes, "the greater part of that which is published is inaccessible to the greatest number of those who would be able to benefit from it."

Each one of the national languages is fenced in by barriers of national loyalties and prejudices, and it does not seem probable that one of them ever will be used universally for intercommunication. A more practical method seems to be the selection of the common words of a half-dozen European languages (where the scientific and technical terminologies have in large part their origin), the standardization or rationalization of these to remove regional peculiarities, and the design of a simple grammar for use with the resultant vocabularies. Thus would be obtained an inter-language that would be a least common denominator of the European languages and which could be read practically at sight by any educated person.

SUCH a language became available with the publication in 1951, after twenty-seven years of research and development by competent linguists, of the *Interlingua-English Dictionary* and the *Interlingua Grammar* (Storm Publishers, 80 E. 11th Street, New York 3, N.Y.) Of the 27,000 words contained in the dictionary, 10,000 are scientific and technologic terms.

The criterion for the acceptance of a word into the Interlingua vocabulary was that it must be present in corresponding forms and with corresponding meanings in at least three of the four language units: (1) Italian, (2) Spanish and (or) Portuguese, (3) French, and (4) English—with German or Russian as possible substitutes.

Impressed by the easy readability of Interlingua, and the simplicity of the grammar, the author decided to begin the publication in this language of a small periodical, called *Spectroscopia Molecular* in his own field of research. The use of Interlingua, it was believed, would make the journal most easily readable by the greatest number of the spectroscopists of the world. The first issue appeared in May, 1952, and the journal has appeared monthly since that time. The periodical has supported itself financially with the receipts from the subscriptions of spectroscopists, laboratories, and libraries, and from the advertisements of companies which fabricate instruments and products of interest to the molecular spectroscopists. There are now subscribers in twenty-nine countries. The six countries with the greatest number of subscribers are: United States of America, Switzerland, India, England, Germany, and Italy.



The author points out that about 70 per cent of the world's engineering literature is written in English, yet more than 70 per cent of the world's engineers cannot read English.

The journal contains brief reports of new research results, a summary of current literature, reports concerning spectroscopic assemblies, reviews of new books, a calendar of future spectroscopic events, details concerning new instruments, and news about spectroscopists and recent developments.

The experience of this little journal proves that Interlingua is suitable for intercommunication. It is probable that 99.9 per cent of the recipients had not studied Interlingua and that they had no interest in Interlingua as such. Nevertheless, they were able to read the journal without difficulty and to derive from it sufficient value to justify, from their point of view, the price of the subscription. This shows that it is not necessary to study Interlingua in order to begin to use it.

Currently, the author is working on a *Multilingual Dictionary for Spectroscopy* (in collaboration with six associate editors, two eminent advisory counselors, and a competent linguistic editor) in which Interlingua is going to serve as a bridge between the languages English, Spanish, French, German, Italian, Portuguese, and Russian. In this, the Interlingua words or terms will be listed alphabetically, each one followed by the definition in Interlingua. Below the definition will appear the corresponding word or term for each of the other languages, these being added by the associate editors (who are competent spectroscopists) for their native languages. The associate editors also may propose improvements in the definitions. The definitions then are revised and sent to the advisory counselors who are especially eminent in this field. After a second revision, the manuscript is sent to the linguistic editor who prepares the manuscript for the publisher.

The user of the dictionary will search for the word of his own language and eighty per cent of the time he will find it without difficulty in the Interlingua list. If not, he will then refer to the index for his language to determine the corresponding Interlingua word. This index will contain only the twenty per cent of the words that he would not be able to locate in the Interlingua list.

With this dictionary, one can go from each of the seven languages to any other one by means of the Interlingua bridge. The dictionary thus will be the equivalent of twenty-one bilingual dictionaries.

In addition to its use as a dictionary, this standard list of spectrascopic terms will have a stabilizing effect on international usage in this field.

A similar *Multilingual Dictionary for Virology* is now in preparation by Dr. F. O. Holmes of the Rockefeller Institute for Medical Research in New York.

To assist scientists and editors who wish to investigate the usefulness of Interlingua in the extension of their work, *Science Service, Inc.* has established an Interlingua Division. This is located at 80 E. 11th Street, New York 3, N.Y., and is under the direction of Dr. Alexander Gode, the competent linguist who played a prominent role in the development of Interlingua.

This division assists in the preparation of summaries in Interlingua to accompany all the original articles in more than twenty medical journals, has assisted in the preparation of summaries in Interlingua for the programs of a dozen international medical congresses, has assisted in the preparation of the texts of presidential addresses for international medical congresses, has assisted in the preparation of lantern slides to accompany papers presented in English in various countries of South America, assists in the correction of linguistic errors in the material for periodicals (such as *Spectroscopia Molecular*) edited completely in Interlingua, prepares in Interlingua a monthly summary of recent scientific developments for *Science News Letter* (1719 N Street, N.W., Washington 6, D.C., and other services of a similar nature. The sole function of this division is to assist scientists, engineers, and others in the use of Interlingua as a medium of intercommunication between groups in different parts of the globe.

During the present century, the vocabularies and terminologies of science and technology have extended themselves—like a great forest fire—from Europe to all parts of the world. These scientific and technical vocabularies constitute the natural center of a language for intercommunication. Among the 27,000 words of the *Interlingua-English Dictionary*, 10,000 are scientific and technical terms. Moreover, practically every educated person has some comprehension of at least one of the European languages upon which Interlingua is based.

These facts, plus the past services of Interlingua in the sciences, shows that this language can be a practical tool for intercommunication in the global era which mankind is now entering.—**End.**

About the Author . . .

Forrest F. Cleveland is professor of physics and director of spectroscopy research at the Illinois Institute of Technology at Chicago, Illinois. He is one of the country's foremost authorities on the international language, Interlingua, and is currently editor and publisher of *Spectroscopia Molecular*, an international journal of molecular spectroscopy published in Interlingua.

Prof. Cleveland

A native of Kentucky, he received the A.B. degree from Transylvania College in 1927. He received the Master of Science degree at the University of Kentucky in 1930 and the Ph.d in physics in 1934. He later served as professor and head of the department of physics at Lynchburg College and as assistant professor at the Armour Institute of Technology. He came to Illinois Institute of Technology in 1940 as an associate professor. In 1943 he was promoted to professor of physics and director of spectroscopy research.

He is a member of Association of Physics Teachers, American Association of University Professors, Virginia Academy of Science, Sigma Xi, and Sigma Pi Sigma. He was also associate editor of the Journal of Chemistry and Physics from 1950 to 1953.

FROM WASHINGTON

BY
MILTON F. LUNCH,
N.S.P.E.'s Legislative Counsel

U. S. Bureau Adopts Own Technical Staff ►

As a result of the critical attitude of the House Appropriations Committee last year on certain Federal agency engineering and design costs, one of them—the Bureau of Indian Affairs—changed its policy and stopped the use of private consulting engineers. The agency's report to the House Committee claims that having the work done by its own technical staff will result in the speeding up of the work and will reduce the engineering and design costs. The Bureau told the Committee that it had an average cost of eight per cent of the total estimated cost of the projects for engineering and design and other related technical functions, of which 3.5 per cent was for engineering and design. The report did not specify the nature of the costs covered by the remaining 4.5 per cent.

◄ *House Committee Asks Technical Personnel Reduction*

The report of the National Park Service, on the other hand, stated that it could not indicate its engineering and design costs as a portion of construction cost because of lack of accounting data for that purpose. However, the agency added that steps have been taken to "break out" costs for engineering and design for future operations. The reaction of the Appropriations Committee to the agency reports has been to press for a reduction of personnel in engineering and design and construction supervision of at least ten per cent in 1961. The Committee also believes ". . . that material savings both in construction costs and personnel can be expected from greater use of standardized plans and specifications."

Kennedy Moves For Disarmament Group ►

An Arms Control Research Institute, in which would be centered technical work on all phases of disarmament, has been suggested by Senator John F. Kennedy of Massachusetts. The Kennedy proposal, not significantly different from a suggestion of Senator Hubert Humphrey of Minnesota, is a modified version of a National Peace Agency plan put forward by the Democratic Advisory Council's Science and Technology Committee a few months ago. The proposed group would conduct research in seismology, atmospherics, acoustics, geophysics and other techniques involved in the disarmament question.

◄ *Eisenhower Slates Pollution Conference*

A little publicized aspect of the President's veto of the water pollution control bill is that a national conference on water pollution is to be held next December. This conference "will help local taxpayers and business concerns to realize the obligations they have to help prevent pollution," the President told Congress. The Chief Executive said that businessmen and industrialists "must face up to the expenditures they must make if industrial pollutants are to be removed from the Nation's waters." The proposed conference, to be arranged by the Secretary of Health, Education and Welfare, "will provide a forum in which all concerned can confront and better appreciate their mutual responsibility for solving this pressing problem," the President stated.

Treasury and Tax Experts Continue Retirement Study ►

Despite many "inside" reports, the only certainty about the status of the self-employed retirement legislation is that the Treasury Department and outside technical tax experts are giving careful study to alternative proposals to be referred to the Senate Finance Committee. The Treasury recommendations, originally reported due by March 1, had not been forthcoming by mid-month. In general, the Treasury alternative to the House-passed Keogh-Simpson-Smathers-Morton bill contemplates the use of existing law which authorizes corporate pension plans, but with some revisions and limitations. Under this approach, the self-employed could establish a retirement program for themselves and their employees on a nondiscriminatory basis. The amounts paid for employees would be deductible as a business expense. The payment for the self-employed would be on the same basis (but not necessarily in the same amount) applicable to the employees. Contributions for sole proprietors and for partners with more than ten per cent ownership would be limited to a contribution of not more than thirty per cent of the annual total employer contributions, but with a floor of ten per cent of earned income, up to $2500. The floor would be, in effect, the same benefit proposed in the pending bill as passed by the House. A further complication in the Treasury plan, however, is that the thirty per cent limitation does not now apply to corporate plans and Treasury would like to apply the limitation to the corporations as part of the self-employed bill. This could cause more technical difficulties, to say nothing of possible adverse reactions from the business community and their consequent demands for hearings and more delay in a short session.

◄ Federal Bureaus Press Professionalism

A run-down of bureaus within the Interior Department on attitudes and programs relating to professional development and registration of engineers shows the following:

Reclamation—Encourage active participation in professional societies and registration as a P.E.

Geological Survey—Strongly encouraged to obtain registration and participate in professional societies.

National Park Service—As a result of similar policies, stated above, "many Park Service engineers are active in professional societies, the more so among the higher grade level personnel."

Bureau of Mines—"Registration as a Professional Engineer is not discouraged, but neither is it encouraged to the same extent that postgraduate work is." (Comment—Bureau of Mines P.E.'s have some additional "postgraduate" work to do on the "higher-ups.")

Bill Would Ease 'Conflict of Interest' Rules for Some ►

A pending bill to deal with the troublesome "conflict of interest" problem within the Federal structure, arising from an extensive study by the Association of the Bar of the City of New York, recognizes the need for less stringent rules for advisers and consultants who act on an intermittent basis. The bar report notes the increasing need for the advice of experts, particularly in the technical area, and that such persons are legally subject to all of the conflict of interests laws which apply to full-time employees. "This fact has brought about both refusals to serve and conscious or unconscious ignoring of the statutes by those who do serve. It has also resulted in a welter of special statutory exemptions." Under the pending bill there would be special rules for "intermittent" consultants, such as being allowed to serve others for pay in transactions involving the Government, except if there was an actual conflict of interest. Similarly, consultants would not be subject to the prohibition that their Government pay may not be supplemented from private sources in return for personal services. There would also be different rules as to receipt of gifts.

Professional Profiles

The fastest jets and the slowest dog-sleds are all part of the exciting career of Brig. Gen. James B. Knapp.

Few engineers have packed a more varied or active career into twenty years than has Brigadier General James B. Knapp.

Since his graduation from West Point in 1939, the forty-four-year-old general has found himself involved in everything from a 250-mile dog-sled expedition in the Canadian Arctic to forty-three combat bombing missions over Europe in World War II. In between, he has held major command posts ranging from a Bomber Group to head of one of the largest cold climate operational bases in the world.

Today, Gen. Knapp, who is a member of the Nebraska SPE and NSPE, is director of civil engineering for the Strategic Air Command at Offutt Air Force Base, Nebraska. In this post, Gen. Knapp faces a variety of engineering responsibilities in providing the facilities necessary to support the expanding mission of SAC.

One of his jobs at SAC has been the development of new concepts of design which has permitted a dispersal of the force and now allows heavy bombers and their crews to respond to alerts in a manner formerly confined to fighter operations. He has also been responsible for the success of the housing program at SAC which has resulted in the addition of 27,000 family units.

Gen. Knapp started his military career at West Point where he graduated in 1939 with a B.S. in engineering. He joined the Army Air Forces and was awarded his wings at Kelly Field, in 1940. As a major in World War II, he assumed command of a B-24 Bomb Squadron with the 15th Air Force in Italy and was later promoted to lieutenant colonel and commander of the 451st Bomber Group.

In 1944, he was promoted to colonel and was assigned as chief of operations for the Mediterranean Allied Air Force. Before the war was over, he had been decorated with the Silver Star, Distinguished Flying Cross, and the Air Medal with four Oak Leaf clusters.

Gen. Knapp was commander of Goose Air Base, Labrador, from August, 1953, to July, 1957, a period in which the base expanded from a small way-station to one of the largest cold climate operational bases in the world. New construction of more than $125 million was either erected or planned during his tour. While at Goose, Gen. Knapp visited all of the remote sites of the early warning system and worked closely with Canadian officials in the solution of cold weather problems. It was here that he participated in a 250-mile dog-sled trek into the Canadian Arctic.

Since his reassignment to SAC, Gen. Knapp has been one of the Air Force's leaders in promoting professionalism for military engineers. Only last spring, he was instrumental in establishing a review course for SAC engineers interested in taking state registration examinations.

In addition to his engineering duties, Gen. Knapp is a command pilot with a total of more than 5,500 flying hours including jet time.

Above: Dr. Beatrice A. Hicks and her husband, Rodney D. Chipp, the two NSPE "people to people" ambassadors, pause on their way to a conference with General Robert E. Cushman, Jr., assistant to the Vice President. **Below:** In a meeting before a Washington luncheon honoring the Vice President, the Project Ambassador couple told Mr. Nixon of their tour and what they hoped to accomplish.

The Pan American Union building and the Department of State were the scene of Washington briefings for the NSPE-sponsored husband and wif month t

P.E.' Ambassado

NSPE's husband a
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Mr. Chipp, who is
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is president of Newa
New York March 13 f
will take them to B
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gineers, educators, h
ciety officers, and gov
report of their trip
Boston, June 8-11.

e Project Ambassador team before they departed for a one-
our of five Latin American countries.

THE PAN AMERICAN UNION
FOUNDED IN 1890
IS THE PERMANENT ORGAN
AND GENERAL SECRETARIAT
OF THE ORGANIZATION OF AMERICAN STATES
THIS IS THE HOME OF ALL THE AMERICAS
THE PRODUCE THEIR COMMON EFFORT
AND THE INST OF THEIR COMMON PURP

A visit to the Pan American Union building.

rs' Leave for So. America

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gineering professions of North and South
their tour of Latin American countries in
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l other government officials in Washington,

y D. Chipp and his wife, Dr. Beatrice A.
ongratulations of Vice President Nixon for
meeting with Mr. Nixon before their de-

lendid idea, your going down there as en-
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ct Ambassador tour sponsored by the Na-
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eers.

director of engineering for Communications
-owned affiliate of IT&T, and his wife, who
k Controls Company, Bloomfield, N.J., left
or a one-month visit to South America which
azil, Argentina, Chile, Peru, and Uruguay.
U.S. and Latin American businessmen, en-
eads of engineering firms, engineering so-
rnment officials, and they will make a formal
t the National Society's annual meeting in

State Department briefings for Project Ambassador included this map session with Richard I. Phillips, acting public affairs advisor, Bureau of Inter-American Affairs.

Left: On their way to talk with officials at the International Cooperation Agency.

Middle: A discussion on U.S. Information Agency facilities available to Latin American countries. Center, John P. McKnight, assistant director for Latin America of the Information Agency.

Bottom: Dr. Philip Glaessner, deputy director, Department of Economic and Social Affairs, Organization of American States, gave the couple a listing of Latin American customs which he said should be taken into consideration by U.S. engineers working in South America.

Before their departure, the couple attended briefings in Washington at the Pan American Union, the United States Information Agency, the International Cooperation Agency, the State Department, and Vice President Nixon's office.

In a session at the Pan American Union building, Dr. Philip Glaessner, deputy director, Department of Economic and Social Affairs, Organization of American States, discussed engineering developments in various South American countries. Dr. Glaessner outlined a number of Latin American customs which he felt should be understood by our engineers who were assigned to South America.

At the U. S. Information Agency, Mr. Chipp and Dr. Hicks talked with Richard Salvatierra, deputy director of the Office of the Assistant Director of Latin American Affairs. Mr. Salvatierra described the library and other facilities made available to South American countries through the Information Agency.

Rollin S. Atwood, regional director for Latin America for the International Cooperation Administration gave the couple a review of ICA missions in South America. They also talked with the chief engineer of the ICA, and with the ICA's director of vocational guidance. C. W. Allen, director of the ICA's Office of Industrial Re-

Leaving the Senate Office Building after a session in the Vice President's office.

Right: The Project Ambassador team boards a plane in New York for the flight to Rio de Janeiro—the first stop in the 30-day tour.

Middle: Paul H. Robbins, right, NSPE's executive director, talks over final plans for the Project Ambassador tour at the National Society headquarters in the Capital.

Bottom: Rollin S. Atwood, left, regional director for Latin America for the International Cooperation Agency, reviews ICA missions in the various South American countries. Standing is C. W. Allen, director of ICA's Office of Industrial Resources.

sources, outlined industrial development problems related to engineering which are existent in Latin America.

The ICA people emphasized the vocational guidance problems that are to be found in those Latin American countries which have only recently "accepted" engineering as one of the professions suitable for a young person with a university background.

At the State Department, the couple had a general discussion session on Latin America with Richard I. Phillips, acting public advisor, Bureau of Inter-American Affairs. State Department people from the South American desks of each of the countries to be visited on the tour briefed the couple on such topics as the industrial, political, and economic conditions in the countries involved.

During their Washington visit, the Project Ambassador engineers also found time to discuss their tour with Paul H. Robbins, NSPE's executive director, at the National Society headquarters.

A full-length article by the Project Ambassador couple, in diary form, will be carried in a late summer issue of the AMERICAN ENGINEER.

Among the major Latin American cities included in the tour are Rio de Janeiro, Sao Paulo, Montevideo, Buenos Aires, Santiago, and Lima.—**End.**

A Six-Point Test . . .

Can Engineering Qualify As A True Profession?

Mr. Ryan

By
TERRANCE W. RYAN*
Student of Mechanical Engineering,
Purdue University

LET us first determine the criteria which define a profession and then apply these criteria to the engineering occupation to determine whether or not engineering can truly be termed a profession. Upon considering this matter, it soon becomes obvious that there are a great many criteria which may be applied to define a profession. I have chosen six which to my mind are most characteristic and important. A profession then is an occupation which:

1. Requires advanced specialization and training,

2. Involves work predominately on a high intellectual plane,

3. Requires the consistent exercise of discretion and judgment,

4. Profits from the cumulative store of knowledge built up by previous members, and whose present members are obligated to contribute their efforts to this store,

5. Is charged with a high degree of public obligation by virtue of its possession of specialized knowledge,

6. Is bound by a definite code of ethics in its relations with clients, colleagues, and the public.

Using the above criteria as a guide, let us now examine the engineering occupation to determine whether or not it can qualify as a profession.

The practicing engineer has either received a formal education at an institution of higher learning where he was subjected to a disciplined period of specialized intellectual instruction and study, or has gained an equivalent education through years of practical experience. In addition, he is each day adding to this store of knowledge by practical on-the-job experience and by keeping abreast of recent developments both in his particular field and neighboring fields as well. Therefore, the engineer certainly meets the first requirement above.

In his daily work, the engineer is constantly called upon to face new and difficult problems. Each new problem is a challenge which, in order to be solved, requires clear and analytical thinking. In this respect the engineer differs from the person who is concerned with routine and identical operations or services which require little or no creative thinking. By dealing with these new and varied problems, he is indeed working on a high intellectual plane.

As he endeavors to solve each new problem, the engineer must call upon his store of knowledge gained through the solution of past problems. Although he may have a wide background of knowledge from which to draw, each new problem will require the making of certain assumptions, such as the probable value of a certain quantity or the expected effect of a cer-

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**Terrance W. Ryan is a senior in mechanical engineering at Purdue University, Lafayette, Indiana. He was a member of the 1959 Purdue Drill Team that placed first in national collegiate competition and is now commanding officer of the group. Mr. Ryan held the rank of Lt. Colonel as Brigade Adjutant of the U. S. Army ROTC in 1958-59. He completed the Army ROTC course as a "Distinguished Military Graduate" in 1959 and has applied for a commission in the regular army upon graduation in June, 1960. Other campus activities and awards include: Military Order of World Wars Award, as outstanding second year advanced ROTC student in 1959; Purdue Order of Military Merit; Scabbard and Blade; American Society of Mechanical Engineers, and, Alpha Kappa Lambda, social fraternity.*

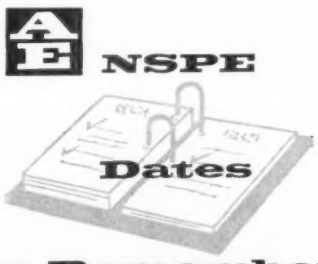
tain condition. It is here that the engineer must and does exercise discretion and sound judgment.

The fundamental principles of mathematics and the physical and engineering sciences which the engineer learned during his formal education and which he must use in his daily work are the result of the efforts of countless engineers and scientists down through the ages. Each engineer is expected to realize this fact and to contribute in any way he can to this great store of knowledge for the benefit of those who will follow him.

Just as the doctor is expected by the public to provide his patients with competent medical treatment and the lawyer is expected to provide his client with competent legal advice and counsel, so the engineer is expected by the public to act in the best interests of all persons concerned and to do honest and competent work at all times. Moreover, as in the medical and legal professions, all engineers are expected to work together to maintain certain standards of competence which all engineers must meet and agree to comply with before they may be allowed to practice engineering. The engineer is, therefore, charged with a great deal of responsibility to the public by virtue of his specialized knowledge.

The professional engineer, who is truly deserving of this title, must realize that he is privileged to enjoy the respect associated with his position and that this position places certain responsibilities and obligations upon him. He must realize that he must constantly live up to the ideals that place "service above gain, excellence above quality, motives of self-expression above pecuniary goals, and loyalty above individual advantage," and should take great pride in so doing. He, therefore, does his part to maintain and further the ideals and goals of his occupation by active participation in the work of his particular engineering society, his church, his community projects, and wherever his talents can best be applied for the benefit of his fellow man.

After examining the engineering occupation with the use of the above criteria, it is obvious that engineering is indeed a profession. This very fact, in addition to raising the status of the engineer in business and society, places another responsibility upon him. As a professional person, he must constantly act and encourage other engineers to act in such a manner as will increase public recognition of engineering as a profession on an equal basis with the medical, legal, and other well-founded professions.—**End.**



to Remember

NSPE State Presidents' Conference—April 8-9, 1960, Memorial Union, Purdue University, Lafayette, Indiana.

Florida Engineering Society—Annual Meeting, April 20-23, 1960, Americana Hotel, Miami, Florida.

Wisconsin Society of Professional Engineers—Annual Meeting, April 21-23, 1960, Northland Hotel, Green Bay, Wisconsin.

New Jersey Society of Professional Engineers—Annual Meeting, April 29-30, 1960, Ambassador Hotel, Atlantic City, New Jersey.

Illinois Society of Professional Engineers — Annual Meeting, May 5-7, 1960, St. Nicholas Hotel, Springfield, Illinois.

Oklahoma Society of Professional Engineers—Annual Meeting, May 6-7, 1960, Biltmore Hotel, Oklahoma City, Oklahoma.

Montana Engineering Society — Annual Meeting, May 6-7, 1960, Helena, Montana.

Nebraska Society of Professional Engineers—Annual Meeting, May 7, 1960, Sheraton-Fontenelle, Omaha, Nebraska.

Maryland Society of Professional Engineers — Annual Meeting, May 14, 1960, Baltimore, Maryland.

Rhode Island Society of Professional Engineers—Annual Meeting, May 14, 1960, Providence, Rhode Island.

New York State Society of Professional Engineers—Annual Meeting, May 19-21, 1960, Hotel Statler Hilton, New York, New York.

Pennsylvania Society of Professional Engineers—Annual Meeting, May 19-21, 1960, Pocono Manor, Pocono Manor, Pennsylvania.

Michigan Society of Professional Engineers — Annual Meeting, May 20-21, 1960, Henrose Hotel, Detroit, Michigan.

District of Columbia Society of Professional Engineers — Annual Meeting, May 25, 1960, Cosmos Club, Washington, D.C.

California Society of Professional Engineers — Annual Meeting, May 27-28, 1960, Lafayette Hotel, Long Beach, California.

National Society of Professional Engineers—Annual Meeting, June 8-11, 1960, Statler Hotel, Boston, Massachusetts.

National Society of Professional Engineers — Fall Meeting, October 19-21, 1960, Hotel Roanoke, Roanoke, Virginia.

Tellers Show Hull President; Elliott Wins Over Dunn

NSPE members have elected Noah E. Hull, of Houston, as the 1960-1961 president of the Society. Mr. Hull and the other officers will take office on July 1.

Also elected in the annual balloting were W. Earl Christian, of New Brunswick, New Jersey, vice president Northeastern Region; R. King Rouse, of Greenville, South Carolina, vice president Southeastern Region; Benjamin E. Elliott, of Madison, Wisconsin, vice president Central Region; Brandon H. Backlund, of Omaha, Nebraska, vice president North Central Region; Thomas T. Mann, of Roswell, New Mexico, vice president Southwestern Region; John H. Stufflebean, of Tucson, Arizona, vice president Western Region.

Russell B. Allen, of College Park, Maryland, was re-elected for his thirteenth term as treasurer.

The only race with opposition was for the vice president's post of the Central Region where the name of Lehmann M. Dunn was entered by petition as provided in the NSPE Constitution. However, he was defeated 7,063 to 5,384, by Mr. Elliott.

Society voters also approved a minor change in Article IV, Section 7, of the NSPE Constitution, adding the words "or otherwise disciplined." With the addition, the section now reads:

"A member may be expelled from the National Society *or otherwise disciplined* for cause, as provided in the Bylaws."

Indiana SPE Plans For June Meeting

Initial plans for the 23rd annual convention of the Indiana SPE at French Lick June 24-25 have been made by the program committee.

The committee, headed by John F. W. Koch, Evansville, outlined a program for the convention.

Meeting with Koch were committee members H. B. Moyer, Elkhart; J. Russell Cooper, Indianapolis, and Gene W. Baldock, Indianapolis, executive secretary of the organization.

The Engineer in Sales— Human 'Catalyst'

By
HUGH A. YOUNG*
Consultant-Technical Marketing

THE purpose of this article will be served if the place of the sales engineer can be more clearly defined, and if in some measure his purpose and place in the profession can be enhanced. As a starting point, a review of the qualifications for predictable success in this field of endeavor will lead to the conclusion that the degree of technical competence must, of necessity, be high. Not the finely focused competence of the specialist, but rather a broad understanding of the field or fields within which his company's competence lies, and an ability, based on technical knowledge, which will enable him to effectively act as the catalyst between need and capability; wasting neither his time, nor that of others, in discussions leading nowhere. It follows then that engineering training, plus experience, or a very broad experience background within the working engineering profession, is a prerequisite.

The personality qualifications of the successful salesman have been the subject of many studies, but it seems valid to conclude that the "ground rules" applicable to the sales profession generally would apply to the sales engineer. These are:

- He must have emotional maturity, "self discipline."
- He must have an outgoing personality and a genuine liking for dealing with widely divergent personalities.
- He must have physical stamina.
- He must have, within ethical limits, a high degree of "self interest" in his desire to move ahead within his chosen branch of the engineering profession. This can be attained by continued broadening of his store of knowledge, with the goal in mind of personal growth within his organization.

A great deal more could be said in support of these qualifications but, in the opinion of the writer, many engineers would do well to carefully evaluate their own background, personality and ambitions, for in the work of the sales engineer they may find greater personal satisfaction, and be able to make more substantial contributions to the growth and advancement of our industry. The need for creative thinking and planning is nowhere more apparent than in this branch of the profession for the man who is capable of interrelating economic growth and need with the state of technical probability within the art.

In most business structures the sales engineer will find himself faced with the need to represent his company in negotiations with nonengineering personnel, management, buyers, contract administrators, etc. To them he must present his company from a different viewpoint; here again his background of experience and training must be sufficiently comprehensive to enable him to convey the nonengineering facets of his company's capabilities with clarity and authority. This ability, as much as any other, may be the yardstick by which the maturity of a sales engineering representative may be measured.

Efficiency is a common word. It can be stated in terms of the ratio of input to output regardless of the subject under analysis. In the case of the sales engineer efficiency can best be increased by asking himself a series of questions and then planning his activities accordingly:

1.) What are my company's long term objectives?

2.) What short term objectives must I achieve which bear toward the long term goal?

3.) How can my day by day efforts be planned to best utilize my time?

4.) What supporting activities from within my own organization will I need, and how will I gain this support?

The last question, may be said to fall in the area of sales management responsibility. However, in any field of sales, and this is no exception, the effects of advertising, sales promotion, shows, exhibits, brochures, technical proposals, etc., can be increased many times over if the sales engineer will assist in planning these aids and then use them to the fullest possible extent.

Returning to questions one through three, it has long been the observation of the writer that time spent in training sales engineering representatives in the philosophy and objectives of his company, time spent in making sure that he knows the history in terms of triumphs and pitfalls through which his organization has grown, time spent in assisting him in becoming part of the team with a clear understanding of the capabilities of people, plant, and financial structure, will be well invested in that his efforts will most effectively work toward the objectives of his organization. This time will pay dividends by enabling him to channel his efforts toward those objectives which will let him perform his major function, bringing

* *Mr. Young has an office in Los Angeles, Calif., as a consultant-technical marketing for a number of nationally-known clients.*

together present and ever expanding needs which mesh with company capabilities and growth plans.

INTERNALLY, within his company, the sales engineer has corollary functions. Some of these, if not covered by adequate management planning, will tend to cumulatively negate his efforts in the field. It is a common thing to hear the statement "I do as much selling within my company as outside." If this condition is even remotely true, it indicates either a lack of maturity and planning on the part of the sales engineer, or a failure on the part of his organization to provide for a shifting of after-sale duties to supporting personnel, to prevent a continuous reduction in sales time due to the ever increasing demands of follow-through on past sales. Real sales engineering talent is rare; one of the best ways to gain greater utilization of existing talent lies in provision for transfer of executory contract responsibilities to support personnel, thus keeping the function and purpose of the sales engineer clearly defined.

Ours is a dynamic, ever-changing industry, hardly recognizable today from even a short ten years ago. Inherent in such an industry is a duty incumbent upon the professional sales engineer—to grow with his industry. This he owes to himself and to his company; to himself for the satisfaction of moving higher in the ranks of his contemporaries, and to his company because this is one of the points which will label him as a contributor to the progress of the organization.

This growth may take many forms. Some, such as participation in professional group activities, shows, etc. readily complement his regular sales function. Others, such as participation in technical or management training programs, can be carried on throughout a business career as a healthy stimulant to the individual, with the added bonus of preparation for greater responsibilities within his organization. Activities of this sort may be encouraged by enlightened management through a variety of programs, but the self discipline required of the individual must come from his own desire to better himself and increase his personal efficiency.

The degree to which a company can translate need, imagination and inventiveness into usefulness marks the degree to which that company has approached maturity. This statement is equally true of the individual contributor to the company effort, particularly to those members of a company team whose contributions reflect their own aggressiveness, talent and imaginative flexibility. The sales engineer is in an enviable position to contribute, not only to his company effort, but to the progress of the industry as a whole because of his unique position of exposure to the visions of the dreamer, the solid hardware of the working engineer, and the needs of government, of industry and of the individual.

It is the contention of this writer that the professional sales engineer, in his role as eyes and ears for his company, stands in a position to contribute not only in the establishment of new outlets for its products, but equally in the planning for future growth through his ability to integrate technological ability with commercial possibility.—**End.**

The author, Hugh A. Young (left) is shown in a laboratory conference with the director of engineering at Packard Bell Electronics, John A. Rhoads (standing), and technician Thomas C. Byard. Mr. Young was formerly employed by Packard Bell as marketing manager. The author says that in most business structures the engineer in sales will find that he will often have to represent his firm in negotiations with nonengineering personnel, management, buyers, and others.

"Blueprint" for Action . . .

AFL-CIO Conference Maps Engineer Union Plans

A "BLUEPRINT" to bring engineers, scientists and technicians within the orbit of organized labor has been issued by the AFL-CIO, following a recent seminar of ten unions at Harvard University. The unions' plans, as revealed in a summary report of the meeting, remain somewhat vague, with more emphasis on the problems than the solutions in finding ways and means to overcome the admitted reluctance of the engineers, scientists and technicians to look to the unions for their welfare. The official summary of the meeting states, nevertheless, that the trade union movement must find the way to bring the professional and technical employees into their fold.

At the root of the unions' concern are census figures reflecting the great recent changes in the composition of the industrial labor force. Between 1952 and 1959, while the number of semiskilled industrial workers was declining five per cent, and nonskilled workers were losing twelve per cent of their strength, the number of professional and technical employees in industry increased by over sixty per cent. The report states: "In the face of these labor force changes the labor movement must break out of its 'blue collar shell' or face the prospect of becoming a declining numerical force."

In outlining programs for organizing professional and technical employees, the report states that the main problem facing organized labor is one of adaptation to the new situation. While the occupational problems facing professional and technical employees are in some cases similar to those of the typical production and maintenance worker, the report recognizes many differences and calls for shifts in union organization and policy to meet them. The report's analysis of the contrasting needs of professional-technical employees and production - maintenance workers covers the following areas.

• *Pensions.* Little difference is seen in the real needs of the two groups of employees as far as pension formulas and systems were concerned. However, it is noted that professional workers seemed to take more interest in the technical details and mathematics of pension and welfare plans. Special "rank-and-file" committees of professional workers to study and evaluate pension and welfare financing are suggested as a possible concession to the professionals.

• *Wage Systems.* Unions see both their strongest bargaining point and their greatest need for a shift in thinking in the wage-system area. While the production-maintenance worker expects to be paid on the basis of the job he holds, the professional employee expects to be paid as much for his knowledge, training and ability as for his actual duties. This makes for the professional's acceptance of merit rating systems, and the report adds that the unions must change their thinking in this area to be successful in organizing professionals. Also, because professional employees are often called upon to travel in the performance of their duties, travel pay and per diem agreements must be given closer attention and emphasis. As a union selling point, the report states that regardless of wage-systems employed, professional and technical employees are as much interested in getting pay raises through whatever means, as are production and maintenance workers. The report reasons that mass employment of professional and technical employees has stripped them of their past social status and individuality, and will lead them to organize for the higher pay needed to buy back their lost social status.

• *Seniority.* Traditional union attitudes on seniority are seen requiring considerable revision to be accepted by professionals. The nature of work performed by professionals, and their high regard for excellence of performance, is felt to minimize the importance of seniority in promotion. As far as layoffs are concerned, professionals' attitudes are thought to be more in line with traditional union policy, and in the case of many types of technical workers, little conflict is seen with traditional policy, both in promotions and layoffs.

• *Union Security.* It is admitted that professional and technical workers have a tendency to "look down" on union shop agreements, and it is pointed out that organizers should not overemphasize union security in early stages of organization. Even in production and maintenance units, little priority is placed by the workers on union security in the early stages of organization. "However, when any group of workers comes to recognize the necessity for their own strong and effective organization, there is good reason to be-

lieve they will come to understand the role and importance of union security provisions," and it was emphasized that in the long run, union policy calling for absolute security should not be compromised.

In discussing the problem of union structure, the report of the seminar outlines four possible structural forms for the unionization of professional and technical employees:

1. Existing industrial unions can extend their fields of operation by retaining their present structure and attempting to win NLRB elections. It is recognized, however, that under the law and present NLRB policy professional and technical employees will have a separate vote in representation questions.

2. Existing industrial unions can extend their jurisdiction through NLRB votes, but in the process can change their structure and policy to better serve the needs of these groups.

3. Professional and technical employees can be organized into a modified "craft union" within the AFL-CIO, with jurisdiction embracing all workers regardless of place of employment. Another approach would be to establish separate craft unions for both professionals and technicals, both to be within the AFL-CIO.

4. Professional and technical workers might be organized on a large scale in an independent craft union (or unions) standing outside of the AFL-CIO.

While stating that more than one of these approaches could be carried forward at the same time, the report nevertheless calls for the organization of professionals and technicals within the framework of the present industrial unions. "Economic power in the United States to a considerable extent tends to be company and/or industrial in character. To counterbalance this economic power, workers must be organized along roughly parallel lines." For maximum effectiveness, groups of workers in each industry must exercise close cooperation and mutual support, the unions claim. The history of unionization is felt to demonstrate the futility of plural, independent unionism in mass production industries, especially in view of the separate contract negotiations necessary under such a system. An example given is the case of one important electronic company where a separate union for professional and technical employees was formed. Although relations between the professional - technical union and the industrial production-maintenance union were very good, according to the summary, the strains involved in negotiating contracts separately at different times became so great that the professional and technical union finally affiliated with the industrial organization.

The report predicts that the nature of mass employment will bring professional and technical employees to realize that to management, they are just workers. In the past, the specialized training and occupation of these employees has given them a sense of individualism and identification with others of like background and professional standing, it is stated. This sense of professional identification has led to a state of mind in which the professional resents any but "colleague authority" in his work, it is added. "Supervision by a fellow engineer is one thing; supervision by the company's works manager or the personnel office is quite another." When 5,000 or 10,000 engineers and technicians work for one company, and where the individuality and self-determination are lost, the report concludes that professionals and technicals will come to realize their only hope of maintaining satisfactory control of their occupational and social status lies in collective bargaining. In addition, the unions believe that vast numbers of professional and technical employees will cause companies to change their traditional attitude of considering them as a fixed cost, and will greatly reduce the job security

(Continued on page 54)

New Literature

FASTENERS—A new technical handbook, "Screw Fastening of Aluminum," has been added to the current series published by Reynolds Metals Company. The new 48-page volume covers the various types of standard and special fasteners and fastening systems used to join aluminum assemblies. The text is supplemented by thirty-eight illustrations and twelve tables. It includes a list of manufacturers of special screw fasteners and recommended hole sizes for various types of self-tapping screws in sheet aluminum and other materials.

(Circle 15 in Readers' Service Dept.)

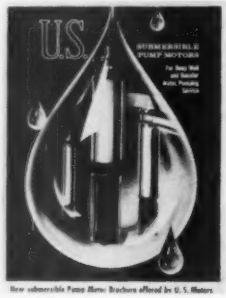
STEEL FILTERS—An 8-page bulletin on multiple-surface porous stainless steel filters is available from Micro Metallic Division of Pall Corporation. The newly revised literature includes information on porous stainless steel filters which can meet a wide range of flow rates, temperatures, pressures and slurries. Several new filter types and sizes are described. Typical filter aid set-ups are described. Full information is given on engineering data on porous stainless steel, including method of manufacture, particle size removal, flow rates, working and welding. A description of RIGIMESH, a furnace welded woven wire mesh, includes characteristics which make it suitable for specialized applications.

(Circle 16 in Readers' Service Dept.)

HEAT EXCHANGERS—The Carbone Corporation is offering a new 20-page engineering manual presenting their POLYBLOC impervious graphite heat exchangers. This manual features full-page illustrations, cutaways, diagrams, and design data. Also among the useful contents are charts, graphs, typical calculations, examples, and specifications. The principles of operation are lucid and well-demonstrated. At the back of the manual there is a full-page, perforated inquiry-data sheet which should prove valuable to companies seeking further information and a solution to current problems.

(Circle 17 in Readers' Service Dept.)

PUMP MOTORS—A new 8-page, full-color brochure on the U. S. line of submersible pump motors is being offered by U. S. Electrical Motors Inc. It contains full-length cutaway drawings showing construction details of special features of submersible motors for 6, 10, and 14" well diameters and explains the water-filled operating principle of U. S. Motors as opposed to the oil-filled principle of ordinary submersibles. The center-spread of the brochure is devoted to exploded and assembled views of the U. S. Submersibles' thrust bearing. The brochure explains, too, how U. S. windings are hermetically sealed in stainless steel to permit water-filled operation; how water circulation cools the motor as well as lubricating its bearings; ratings and specifications for U. S. submersibles from 5 to 300 h.p.; a description of U. S. testing and pre-shipment procedures, and other information.



New submersible Pump Motor Brochure offered by U. S. Motors

(Circle 18 in Readers' Service Dept.)

CLOSED CIRCUIT—A 112-page catalog of closed circuit television equipment for industry, described as the first complete listing of its kind, has been announced by the Radio Corporation of America. The RCA Industrial Television Catalog is designed as an aid in planning TV systems for steel mills, railroads, metal working plants, public utilities, airlines, petroleum refineries and other industries. The catalog covers such TV equipment as cameras, housings, lenses, monitors, switchers, microwave equipment and the new RCA Television Tape Recorder.

(Circle 19 in Readers' Service Dept.)

CONCRETE DECKS—A new manual called "Plumbing for Flexicore Decks" is now available. The 12-page, two-color booklet explains in detail how openings can be designed into precast concrete decks and framed during construction, or hand-cut or drilled after the deck is in place. It also describes typical plumbing conditions and shows efficient methods of providing openings for each. A number of framed openings and special precast units that can be designed into the job are also pictured, along with several pages of details that cover most typical conditions plumbers encounter. Concise, clear, easy-to-read, and amply illustrated, the new manual contains authoritative help and information for engineers, architects, and contractors, as well as practical on-the-job instructions.

(Circle 20 in Readers' Service Dept.)

STEAM CLEANERS—A new bulletin by Vapor Heating Corporation describes their complete line of Upgrader steam cleaners. Eight pages of details and specifications are included covering four basic models of the Upgrader steam cleaner. These models have capacities of 100, 200, 750 and 1500 gallons per hour of hot cleaning solution.

(Circle 21 in Readers' Service Dept.)

GAS ENGINES—The complete line of Caterpillar natural gas engines for all applications is described in an 8-page booklet by Caterpillar Tractor Company, Engine Division. The booklet traces the development of the natural gas engine at Caterpillar; shows model views, specifications and fuel consumption curves of current models; and explains why these engines offer the *lowest cost per horsepower* in the industry. The booklet is replete with photographs and job stories illustrating actual performance of Cat. natural gas engines in drill rig, cotton gin, irrigation, gas compressor, pipeline, air conditioning, sewage disposal, gas separation, electric, standby and other installations.

(Circle 22 in Readers' Service Dept.)

PRODUCTS—Potential for design and production of electronic and electromechanical devices for industry by Lear, Inc., is described in a new brochure just issued by the firm. The new brochure outlines Lear's experience in the manufacture of precision instruments and lists industrial products now available, those now being used in defense which are readily adaptable for industrial use and those now being prototyped.

(Circle 23 in Readers' Service Dept.)

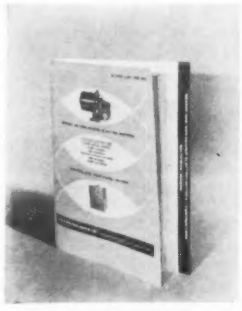
PHOTOCOPIERS—A 16-page booklet, describing the benefits of APECO photocopy equipment in a wide range of businesses, has been published by American Photocopy Equipment Company. The full-color booklet, titled "The All-Purpose Copymaker," explains to potential users the time and cost savings derived from photocopy use by small and large companies alike. Each model in the company's "Auto-Stat" line of photocopiers is described in detail, along with the type of office it was designed to serve.

(Circle 24 in Readers' Service Dept.)

SPEED REDUCERS—Modern methods of speed reduction with compact, shaft mounted units in a wide range of sizes and horsepowers are described in a new 64-page bulletin by Dodge Manufacturing Corporation. Besides an expanded line of Torque-Arm speed reducers for mounting on shafts of driven machines, the bulletin also presents reducers for flange mounting, vertical shafts, right angle drives and screw conveyor drives. Construction details, dimensions, prices, and installation information are given in sections illustrated with photographs and engineering drawings. Tables are included to simplify selection of reducers for various applications, power requirements and output speeds. Other tables list Dodge V-belt drives recommended for use with Torque-Arm and other Dodge reducers and screw conveyor drives. Typical industrial uses of stock models and special reducers are illustrated. An entire section is devoted to Dodge screw conveyor drives.

(Circle 25 in Readers' Service Dept.)

MOTORS—Just published, in a convenient, easy-to-use size file folder, is a 28-page catalog, from B & B Electric Motor Company. This catalog lists hundreds of geared and nongeared electric



motors from 1/2000 to 25 HP that are available for immediate delivery. Complete prices and electrical information is also given. In addition, listed complete with prices and other pertinent information are Heller Thyratron Controllers, Silicon and Selenium Rectifiers, Ther Rectifiers and H-G-B Controls.

(Circle 26 in Readers' Service Dept.)

ALUMINUM ALLOYS—A guide to the selection of aluminum alloys for virtually any product that can be made of the light, corrosion-resistant metal is contained in a new booklet offered by the Metals Division of Olin Mathieson Chemical Corporation. The 24-page booklet, "Olin Aluminum Mill Products," describes the physical properties, fabrication characteristics and economic advantages of a wide variety of aluminum sheet, plate, rod, bar, extrusion, and casting alloys. The various tempers, finishes and patterns available are discussed. Aluminum's yield and tensile strength, thermal conductivity and electrical conductivity are graphically compared with those of other materials. Information on such diverse subjects as specialty sheet products (such as foil re-roll stock and roofing sheet), bus conductor, mine and oil country pipe, architectural shapes, and the efficient storage of rod and bar, is included. The booklet is illustrated with photographs showing various phases of Olin Mathieson's ingot casting, sheet-tolling, extruding, research and other operations.

(Circle 27 in Readers' Service Dept.)

STEEL TUBING—Both seamless steel tubing and electric welded steel tubing are described in the 8-page 1960 catalog offered by Ohio Seamless Tube Division of Copperweld Steel Company. Carbon and alloy steel grades of seamless tubing are covered in mechanical, pressure, aircraft mechanical and airframe categories. Carbon steel grades of electric welded steel tubing are reviewed in mechanical and pressure categories. In addition, a section covers fabrication and forging of steel tubing into finished or semi-finished tubular parts and components.

(Circle 28 in Readers' Service Dept.)

CONVEYOR IDLERS—A new 48-page engineering and product information booklet on belt conveyor idlers has been issued by Hewitt-Robins Incorporated. Included are details of construction, comparison of 10 competitive designs, selection, procedure and examples, engineering tables, dimensions and specifications. The catalog illustrates and describes the basic types of idlers used in all types of service—troughing, impact, troughing trainer, transition, deep trough, return, flat belt, impact feeder, return trainer, feeding and picking, live shaft flat belt impact, wire rope, and rubber spiral idlers. Detailed information is presented on most of the standard 134 styles of idlers which Hewitt-Robins manufactures.

(Circle 29 in Readers' Service Dept.)

DIESEL FUEL TANKS—A new four-page illustrated bulletin on fibre-glass diesel fuel tanks for the motor transportation industry has been published by Apex Reinforced Plastics, division of White Sewing Machine Corporation. The bulletin describes the advantages of fibre-glass diesel fuel tanks, including substantial weight reduction, elimination of corrosion and maintenance, and increased safety and equipment life. Also described in the bulletin is the manufacture of the tanks from a unique reinforced plastic centrifugal molding process developed at Apex, together with the characteristics of tanks manufactured from this process.

(Circle 30 in Readers' Service Dept.)

These listings are informational only and are not an endorsement of the products, nor of the manufacturer's claims. To receive any of the new literature described in these columns, merely circle the item number in the Readers' Service Dept. and mail to AMERICAN ENGINEER.

Report on a Case by the Board of Ethical Review

The Board of Ethical Review was established to provide service to the membership of the NSPE by rendering impartial opinions pertaining to the interpretation of adopted Canons of Ethics and Statements of Policy regarding professional conduct. The *American Engineer* will print findings on specific cases as they are reported by the BER to the NSPE Board of Directors.

Case Number 59-1

Subject:

Advertising of engineering services

Facts:

A series of cases, set forth in the following examples, submitted for opinion, raise substantially the same question and are consolidated in this opinion for general guidance.

Example 1—The following two-column paid advertisement was published in the classified section of a local telephone directory:

CONSULTING STRUCTURAL ENGINEERS
(Doe and Roe)

SOUND	Building Design	Industrial and Commercial Building Design
LOW	Appraisal	We may be able to save YOU future worries and needless expense through proper Design and Supervision of Construction
COST	Cost Estimates	
STRUCTURES	Heavy Machine Foundations	
START	Vibration Control	
WITH		
GOOD		
DESIGN	Soil Investigations	Call us at (telephone number) address
	Safe Floor Loads	
	Expert Testimony	

Example 2—The following 7½" x 7½" display advertisement appeared in a daily newspaper of general circulation:

JOHN A. DOE & ASSOCIATES
Engineers
Somewhere, U.S.A.

We are proud to have contributed our engineering services in the realization of the following mileposts in the growth of our native city:

Sewage Treatment Plant
Sewage Lift Stations
Sanitary Sewer System
Water Storage Tanks
Drainage and Raw Water Supply
Street Resurfacing Program
Avenue Paving and Sewers
—River Plaza Parking Facility

Progress Through Engineering
Is Our Only Product

Example 3—A full-page advertisement of a nationally known manufacturing company, in a trade magazine with primary circulation to engineers and the construction industry, featured statements and pictures naming and portraying the consulting engineering firm which had designed certain structures utilizing the product of the manufacturer. It is assumed that the engineering firm consented to the use of its name and pictures of certain of its engineering personnel and designed structures.

Question:

While each of these cases is different from the others, they all raise the basic question of whether professional engineers may advertise their services, and, if so, the limitations or restrictions which may apply.

References:

Canons of Ethics, Section 2—"He will not advertise his work or merit in a self-laudatory manner and he will avoid all conduct or practice likely to discredit or do injury to the dignity and honor of his profession."

Canons of Ethics, Section 16—"He will not accept commissions or allowances, directly or indirectly, from contractors or other parties dealing with his clients or employer in connection with work for which he is responsible."

Rules of Professional Conduct, Rule 5—"Circumspect advertising may be properly employed by the engineer to announce his practice and availability. The form and manner of such advertising shall satisfy in all respects the dictate and intent of the Canons. Only those media shall be used as are necessary to reach directly an interested and potential client or employer, and such media shall in themselves be dignified, reputable and characteristically free of any factor or circumstance that would bring disrepute to the profession or to the professional using them. The substance of such advertising shall be limited to fact and shall contain no statement or offer intended to discredit or displace another engineer either specifically or by implication."

Rules of Professional Conduct, Rule 6—"Telephone listings shall be limited to name, address and telephone number under each branch listing in which he qualifies."

Rules of Professional Conduct, Rule 27—"He will not accept financial or other considerations, including free engineering designs, from material or equipment suppliers for specifying their product."

Rules of Professional Conduct, Rule 49—"It shall be considered ethical for an engineer to solicit an engineering assignment, either verbally or written. Such solicitation may be in the form of a letter or a brochure setting forth factual information concerning the engineer's qualifications by training and experience and reference to past accomplishments and clients."

Discussion:

Section 2—Read by itself, Section

(Continued on page 55)

Top Speakers Headline NSPE Annual Meeting in Boston

- Saltonstall, Dryden and Burke to Appear
- James Fairman Receives NSPE Award

Hugh L. Dryden, deputy administrator of the National Aeronautics and Space Administration, and Admiral Arleigh Burke, chief of naval operations, will be among the featured speakers at NSPE's annual meeting in Boston, June 8-11.

The four-day affair, to be held at the Hotel Statler Hilton, will be centered around the theme of "Engineering's Decade of Decision."

Close to a thousand engineers from all parts of the country are expected for the various sessions which will include professional meetings, functional section discussions, regional luncheons, and banquets. The Massachusetts SPE is host for the 1960 meeting. Co-hosts are the states of Connecticut, Maine, New Hampshire, Rhode Island, and Vermont.

Many engineers will be bringing their families to Boston for a combined professional meeting and vacation in the nearby New England recreational area.

Two highlights of the Boston meeting will be the presentation of the 1960 NSPE Award for outstanding service to the engineering profession, and the announcement and presentation of the first annual NSPE Industrial Professional Development Award.

The recipient of the 1960 NSPE Award is James F. Fairman, senior vice president, Consolidated Edison Company of New York. Formal presentation of the Award will be made at the banquet session on June 11.

Sen. Saltonstall

Mr. Dryden

Adm. Burke

Mr. Fairman holds B.S.E. and M.S. degrees and an honorary doctor of engineering degree from the University of Michigan. He began his service with the Brooklyn Edison Company in 1925 as assistant outside plant engineer. During 1951 and 1952 he was on leave for government service as deputy administrator and administrator of the Defense Electric Power Administration. He was named senior vice president for Consolidated Edison in 1957.

Mr. Fairman has been chairman of the Edison Electric Institute's Technical Appraisal Task Force on Nuclear Power, and has served

Mr. Fairman

Mr. Fairman is the 10th individual to receive the Award since it was first presented in 1949. Other recipients were: Herbert Hoover, 1949; David B. Steinman, 1952; Charles F. Kettering, 1953; Harry A. Winne, 1954; A. A. Potter, 1955; Donald A. Quarles, 1956; Granville M. Read, 1957; Nathan W. Dougherty, 1958, and William F. Ryan, 1959.

The 1960 Award cites Mr. Fairman for his "outstanding performance and originality in utility system design and operation; responsible citizenship in national defense; pioneering leadership in the development of nuclear energy for peaceful purposes; and continued initiative in the advancement of the engineering profession."

The recently restored steeple of Boston's "Old North Church" towers above the lifelike statue of that famous patriot, Paul Revere.

Thoughts on Professionalism...

By PAUL H. ROBBINS, P.E.
NSPE Executive Director

Professionalism—Whose Definition?

FREQUENTLY when management-engineer employment problems arise, particularly when a union situation is involved, expressions come from management to the effect, "How can we get our engineers to act professionally?" Corresponding conversations with the engineers frequently bring forth the comment, "Why doesn't management recognize us as professional people?"

NSPE has always recognized this to be a two-way street. Certainly engineers have no right to expect professional treatment and status unless their attitude and behavior are such as to merit this recognition. Likewise, management is at fault if they believe that the professional attitude on the part of engineers can continue to exist surrounded by nonprofessional policies and lack of recognition of the group as professional people.

Despite the concern, however, among both groups the perennial and perplexing problem of communications makes it essential that both groups understand the attitude and contributions of the other. To assist in this direction the Professional Engineers Conference Board for Industry is about to embark upon a research project to obtain the impressions and opinions of both management and engineers in industry as to what are their concepts of professionalism. There are, of course, many facets to this problem, and it will be impossible within the limitations of a practical study to inquire deeply into more than a few.

One concept, of course, which will be very difficult to evaluate will be the effect of the public image of the engineering profession. Undoubtedly, there will be those who see no relationship between the general concept of the profession of engineering and either their own jobs or their companies' individual policies. An example of this arose recently in a conversation with officials of a company concerned with a union situation of its engineers. The general management attitude was to the effect that whether or not the engineers were unionized was of some concern to them but this was basically the decisions of the individual engineers and if they chose to be represented by a union the company would, of course, be guided accordingly. NSPE representatives in offering the assistance of the Society with its information and materials on the perplexing problem of employment practices, were met with a comment to the effect that the Society could perhaps better extend its energies creating a professional concept among students. While this is admittedly an important area and one to which NSPE is devoting considerable work, it apparently escaped these management representatives that the fact that their engineers were unionized presented a roadblock in creating a public image of a profession and encouraging young people to enter the rigors of an engineering training.

It is most encouraging, however, to recognize that the attitude of these management representatives is not the prevalent attitude in management relying heavily on engineering and scientific brainpower. More progressive companies are recognizing not only the necessity of creating a satisfactory professional atmosphere in their employment situation for engineers and scientists but that this professional atmosphere contributes greatly to the public image of the profession as a whole.

as chairman of the National Association of Manufacturers' Committee on Nuclear Energy. He is a member of the New York State Atomic Energy Advisory Committee, and a vice president and director of the Atomic Industrial Forum. A past president of the New York State Society of Professional Engineers, Mr. Fairman has received the Distinguished Service Award of the U.S. Department of the Interior, and the Edison Medal.

A representative of the industrial firm selected for the NSPE Industrial Professional Development Award will receive a plaque citing his company for "its record of advancement and improvement of the engineering profession through development and use of forward-looking engineering employment practices in accord with professional standards." Nominations for the Award were suggested by local chapters. The final selection was made by an NSPE Industrial Award Committee.

Professional meetings will be held throughout the day on Thursday, June 9. Regional luncheons will also be on the June 9 schedule of events. Admiral Burke will speak at a banquet Thursday. He will be introduced by Senator Saltonstall of Massachusetts.

Functional sections, including those made up of members in private practice and government, will meet Friday, June 10. After a general luncheon Friday, NASA's Hugh Dryden will keynote the afternoon session with a talk on engineers and the space age. A plenary session Friday afternoon will be devoted to panel discussions centered around the 1960 meeting theme.

An "old fashioned New England clambake" at Nahant will be the chief attraction Friday evening.

Installation of new officers for the NSPE year 1960-61 will be held at the final banquet Saturday evening.

Exhibit space for the meeting is still available, according to Benjamin Mills, Jr., of Needham, Mass., meeting chairman. A complete program of the affair will be published in the May issue of the AMERICAN ENGINEER.

Observance Marks 10th Year With Widespread Programs

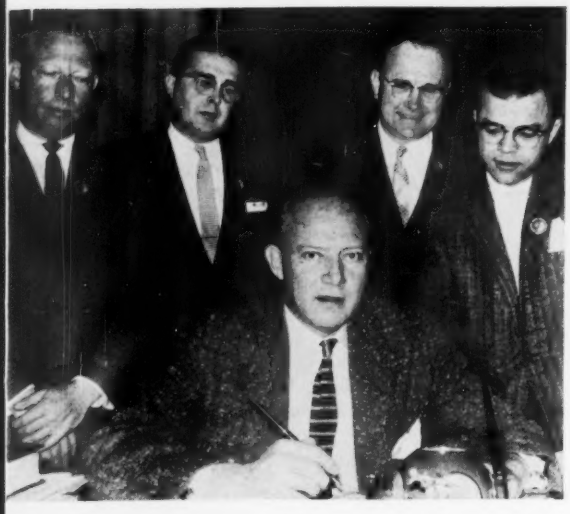
The tenth consecutive National Engineers' Week under NSPE sponsorship was marked by a broader participation than ever before on the part of engineering groups, industrial firms, government agencies, and educational institutions.

Press coverage of the events of the 1960 observance as indicated by the newspaper clippings received at the National Society headquarters, was considerably more extensive than in previous years. More special newspaper sections on the Week were also published for the 1960 observance.

Sales of Engineers' Week promotional material at NSPE headquarters totaled $10,212.89 for 1960. This is approximately $700 over the total sales for this material for the 1959 Week.

Chapter and state society activities for the 1960 Week included career conferences for high school seniors, scholarship awards, speaking programs for civic and other groups, the showing of films on engineering and career opportunities in industry, radio and TV programs, exhibits and poster displays, guided tours through industrial and research facilities, open house programs at engineering schools, and the obtaining of proclamations for the Week by mayors and state governors.

In New Jersey, 102 high school students from Essex, Hudson, Union and Bergen counties toured the Western Electric plant in South Kearny. In the San Francisco Bay area three top high school science and mathematics students were



Top: The United States Steel Corporation's 1960 Engineers' Week exhibit set up in the lobby of the firm's headquarters in Pittsburgh.

Center: A close-up of the United States Steel exhibit, showing the telephones on which could be heard a recorded message describing the world of tomorrow. On the table was literature concerning engineering, including the NSPE booklet, "Engineering . . . A Career of Opportunity."

Left: Governor Steve McNichols of Colorado signs an Engineers' Week proclamation for his state. Behind the Governor are officers of the Professional Engineers of Colorado.

awarded scholarships totaling over $2,000. At the Lamar State College of Technology in Beaumont, Texas, local engineers arranged an engineering and science lecture series for area high school students. A hundred ninth grade students in Greenburgh, New York, were taken on a tour of the town's central pumping station. Part of the latter program included a lecture and demonstration on how engineers apply higher mathematics to daily problems in water supply.

Science shows and exhibits sponsored by local chapters increased sharply during the 1960 Week. Typical was the High School Science Show sponsored by the Washington County Chapter of the Pennsylvania SPE. A $500 tuition award and other prizes were given to the winners in the show. The Marion Chapter of the Ohio SPE presented outstanding achievement awards to eight high school students for scholastic work in mathematics and science. The Cleveland Technical Societies Council sponsored a tour of the Case Institute of Technology for 150 pupils in science classes in the Cleveland area.

Two engineering students, one at Rice Institute, and the other at the University of Houston, were presented with "Outstanding Student Engineer" awards by the San Jacinto Chapter of the Texas SPE. A high school girl was chosen as one of ten outstanding science and mathematics students in Mill Val-

Above: H. W. Honefenger, left, St. Louis district manager for the Elliott Co., receives an "Engineer-of-the-Year" award on behalf of the St. Louis Chapter of the Missouri SPE.

Above: An Engineers' Week window display in Lebanon, Pa.

Below: Bruce Mitchell, left, president of the San Diego Chapter of the California SPE, and Eugene A. Balas, founder and first president of the Chapter, in front of the NSPE booth in the Conference Building, Balboa Park, Calif.

Below: A. Holly Batterson, Nassau, N.Y. county executive, presents a proclamation for Engineers' Week to members of the Nassau Chapter of the New York State SPE.

Top Left: John R. Hollinshead, right, award chairman for the Nashville Chapter of the Tennessee SPE, congratulates Arthur W. Crouch after the latter had been presented with the R. Paul Farrell Award of Merit.

Top Right: Miss Marie Martin and Kenneth Berkowitz pose with Karl Vaupel, P.E., of the Queens Chapter of the New York State SPE, after winning the first and second prizes in a high school essay contest on "What Engineering Means to Me." The prizes were presented during Engineers' Week at Fort Toten, N.Y.

Left: A testimonial dinner and dance sponsored by the Bronx County Chapter of the New York State SPE brought this group to the dais for picture taking.

ley California. Honor certificates for math and science were presented to forty-eight Toledo area high school students and one University of Toledo student by the Toledo Technical Council. The San Diego Engineers' Week Committee organized a dinner meeting to honor outstanding area math and science students and their instructors. The dinner featured a talk on "Men, Machines, and Success," by Mortimer Rosenbaum, chief engineer of Convair-Astronautics. An essay contest on the topic of "What Engineering Means to Me" for junior and senior high school students was sponsored by the Queens Chapter of the New York State SPE. A group of twenty-three high school students had a chance to see engineers at work in the Winston-Salem, N.C., area. The young people spent the day with local engineers in plants, research laboratories, and consulting offices.

An exhibit of books, magazines, and pamphlets on subjects related to engineering was on display at the Lodi, California, public library. The special exhibit was sponsored by the San Joaquin Chapter of the California SPE. Thirty-one students in Richmond, Kentucky, were given a tour of the Westinghouse plant in that city.

"Engineer of the Year" awards were made by a large number of chapters during the 1960 Week. L. R. Durkee, director of Northwest operations for the U.S. Housing and Home Finance Agency, was named for that award as a highlight of the Seattle observance. Aake Frans Hedman was selected as "Engineer of the Year," and Merrill DeMerit as "Engineer of the Decade" in Chattanooga, Tennessee. Hedman designed the Olgiate Bridge across the Tennessee River, and DeMerit has been chief power engineer of the TVA since 1940. Two engineers were honored for outstanding public service at a program in Lansing, Michigan.

John T. West, Jr., secretary and executive secretary of the Pennsylvania SPE, was selected as "Engineer of the Year" by the Chester County Chapter of the State group. The same title was awarded to H. W. Honefenger by the St. Louis Chapter of the Missouri SPE. An

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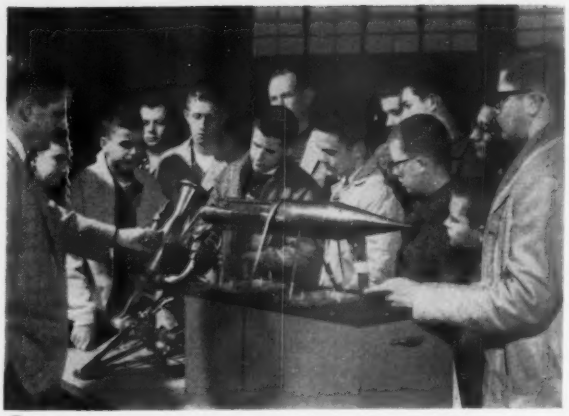

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1. An Atlas missile and an X13 Vertijet were featured at the Engineers' Week exhibit in Balboa Park, San Diego. **2.** Brigadier General R. H. Curtin, deputy director for civil engineering in the Air Force's Directorate of Civil Engineering, gives the keynote speech at an Engineers' Week luncheon in Arlington, Va., sponsored jointly by the District of Columbia SPE and the Air Force. **3.** Roy Matz, of the Tullahoma Chapter of the Tennessee SPE, explains the operation of a rocket motor to members of a high school science club. **4.** A banquet scene at the Engineers' Week affair sponsored by the Delaware Council of Engineering Societies. **5.** J. Howard Edmondson, right, Governor of Oklahoma, presents a proclamation for Engineers' Week to Frank S. Tayler, left, secretary-treasurer of the Oklahoma SPE, and R. F. Danner, president of the state group. **6.** Twenty-three engineers, representing fifteen different national engineering societies in the Oklahoma City area attended a Washington's birthday banquet in that city on February 22 sponsored by the Central Oklahoma Chapter of the Oklahoma SPE. **7.** This prize winning display by the American Institute of Industrial Engineers was on exhibit at the 1960 Engineers' Week banquet in Toledo, Ohio.

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award for the outstanding engineering accomplishment of the year was presented to George R. Higinbotham, president of the Mountaineer Coal Co., by the Fairmount Chapter of the West Virginia SPE.

The theme for the observance, "Engineering's Great Challenge—the 1960's," was utilized in speeches, newspaper articles, TV panels, and numerous other types of promotional projects. Senator Albert Gore, for example, spoke on "The Beckoning Sixties" at a banquet in Knoxville, Tennessee. Harold A. Mosher, NSPE president, was the keynote speaker at the opening of the annual meeting of the Minnesota SPE in St. Paul, Minnesota. He discussed the role of the engineer in America's future. In Corpus Christi, Texas, John K. Howell, regional engineering manager of the apparatus division of Westinghouse's St. Louis office, spoke on "Developments in Research."

More than 600 engineers at the annual meeting of the Engineering Societies of New England and the Massachusetts SPE heard Dr. Asa S. Knowles, president of Northeastern University, speak on "Challenge for Engineers for the 1960's." Frank W. McCulloch, Los Angeles news bureau chief for *Time, Life,* and *Fortune,* spoke on the growth of science, engineering, and technology in the Western States. "What's Ahead for Engineers in the Petroleum Industry" was the subject of a talk by G. R. Benz, manager of the engineering department for the Phillips Petroleum Company, Bartlesville, Oklahoma, at an Engineers' Week banquet sponsored by the Dallas Chapter of the Texas SPE. Brig. Gen. R. H. Curtin, deputy director for Civil engineering operations, U.S.A.F., spoke to engineers in the Washington, D. C., area on "Engineers in Government and the Space Age."

An Engineers' Week audience in Philadelphia heard a G.E. executive, Hilliard W. Paige, general manager of the firm's missile and space vehicle department, warn that if Russia ever became ruler of space, she would be able to control the earth's weather, causing droughts in America if she wished, and jam communications at will.

CLASSIFIED ADVERTISING

Minimum 3 lines.
Undisplayed, $1.80 per line. Three or more consecutive insertions $1.50 per line each.
Displayed: Same rate as General Advertising.
Positions Wanted: Undisplayed, 90¢ per line. Three or more consecutive insertions 75¢ per line each. Displayed: General Advertising rates, less 50%.
Box Number chargeable as one line.

Mail Box Number replies to:
AMERICAN ENGINEER
2029 K Street, N.W. Washington 6, D.C.

Positions Wanted

Mechanical Engineer, P. E., 7½ years design and project engineering experience in power plant and refinery construction. Three years mechanical engineering research and computer programming. Desires project engineering and/or administrative work. Prefers Midwest. Box 400, AMERICAN ENGINEER.

Civil Engineer, E. I. T. 3 years experience in design of streets, drainage, sewage collection systems, water distribution systems, water treatment plants. One year as lead party chief for municipality. Experienced in client contact. Desires responsible position with construction or consulting firm. Prefer Florida (resident). Box 401, AMERICAN ENGINEER.

Miscellaneous

CONSTRUCTION SUPERVISION
Executive Training Course by mail for top positions. Publishers Manual of Advanced Construction Management. Send postcard for details.
National Schools of Construction
Est. 1952, AE
Satsuma, Florida

Positions Available

Mechanical Engineers. Excellent opportunity for Project Managers, Project Engineers, and Design Section Chiefs experienced in design of heating, ventilating, air conditioning, piping, power plants. Extremely wide variety of work (including client contact) with established Midwest consulting firm. Permanent. Good starting salary, advancement, and vacation program. Moving expenses paid. All replies will be answered. Box 100, AMERICAN ENGINEER.

Prestressed Concrete Sales-Design Engineer for young, established, expanding prestressing plant near Denver. Structural design background helpful. Time to be divided between sales work and design-estimating. Desire top man as assistant to manager and capable of full charge. Salary open, profit sharing plan, vacation. Send complete resume. Strictly confidential. Rocky Mountain Prestress Company, 2800 West Mansfield Avenue, Englewood, Colorado.

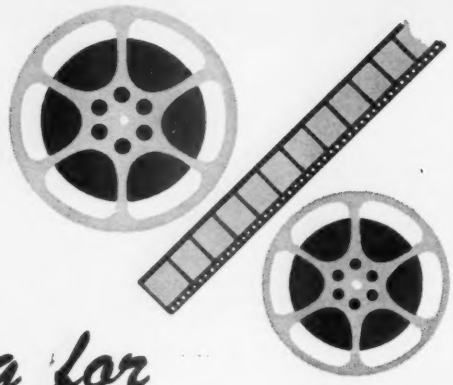
Civil Engineer—Capable of supervising civil engineering department in established consulting engineering firm. Experienced in water and sewerage facilities, municipal work and surveying. Must have sales and organizational ability to expand present department. Salary commensurate with ability. Reply Box 203, AMERICAN ENGINEER.

Place Your Classified Ad in AE to Reach More Than 60,000 Readers!

Annual Meeting in Mississippi

Shown are three officials attending the recent annual meeting of the Mississippi SPE. They are, l.-r.: O.B. Curtis, president-elect of the National Council of State Boards of Engineering Examiners; R. King Rouse, NSPE vice president, and Arthur C. Miller, past president of the Mississippi Society.

NSPE Presents:



"Building for Professional Growth"

Here is a film covering the activities of the National Society of Professional Engineers at the chapter, state, and national levels. A milestone in the NSPE public relations program, "Building for Professional Growth" is a filmed presentation on the values and benefits of Society membership. Activities covered in the film include NSPE efforts in registration; research projects such as the Income and Salary Survey, the Professional Engineers Conference Board for Industry reports; legislative cooperation; National Engineers' Week, and other programs. Also included are scenes from actual chapter, state, and national level meetings.

"Building for Professional Growth" can be shown on any 16mm sound projector. Reservation requests should be made for three choices of dates. Notification of available date will be sent from NSPE headquarters immediately after each reservation request is received.

RENTAL FEE: $10

(Includes 8-page booklet "Ideas For Your NSPE Film Program," and 15-minute talk on NSPE.)

Use this coupon to reserve your film

NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS
2029 K St., N.W. • Washington 6, D. C.

Please reserve us the NSPE film "Building for Professional Growth" for the following choice of dates:

_____ (1st) _____ (2nd) _____ (3rd)

SHIP TO:

Name_____

Street_____

City_____ Postal Zone_____ State_____

(Make checks payable to National Society of Professional Engineers)

By Mrs. Garvin H. Dyer, Chairman of the Ladies Auxiliary Advisory Committee.

It is with deep regret that we report the death of Mrs. N. W. Dougherty, wife of Dean Emeritus N. W. Dougherty of the College of Engineering, University of Tennessee. Mrs. Dougherty was one of the most actively interested members of the Women's Auxiliary of Knoxville, Tennessee, from the time of its organization, and was a very prominent figure in the cultural life of Knoxville.

At the New York State Society meeting held in Albany in February the ladies met to discuss the formation of a State auxiliary. Since there are only two chapter auxiliaries in the State—Westchester and the Bronx—it was decided to form a temporary committee whose function and chief purpose would be to help form more chapter auxiliaries. Both Westchester and Bronx representatives volunteered to do all they could to help. If enough chapter auxiliaries are formed by June, when the next State meeting will be held, there is a strong possibility that a State auxiliary may be formed.

The Mississippi State Auxiliary enjoyed a full day of activities in January at the annual winter meeting held in conjunction with the Mississippi Society of Professional Engineers. The days activities started with a coffee in the Gold Room of the King Edward Hotel, followed by a short business meeting. Luncheon was in the Bamboo Room, followed by bridge. In the evening the ladies joined their husbands at the annual banquet.

The Beaver County, Pa., Auxiliary entertained their husbands in February at the Youth Hall of the First Presbyterian Church. Mr. Ingolf Kvamme showed colored slides of his five month trip to Europe.

The Bucks County, Pa., Auxiliary and the men's group arranged a Christmas Party held at the Doylestown Country Club. Members from the Valley Forge Chapter were invited and eighty-eight people enjoyed the dinner and dancing.

The Erie, Pa., Auxiliary held their annual "white elephant sale" in January. The wives get a lot of kidding from their husbands about buying each others "junk." However, the proceeds of about $50 are used to buy engineering books for two engineering colleges.

The West Palm Beach, Fla., Auxiliary are having a very active year. They meet jointly with the men's group each month and arrange for several pot luck dinners during the year as well as a Christmas Party. They held an outing aboard "The Paddlewheel Queen," a local sightseeing boat, at which all members and guests brought box lunches and enjoyed eating, singing and dancing under a full moon.

In February, the Blue Water Chapter, Port Huron, Mich., held a joint dinner meeting with the men's Chapter at the Black River Country Club. The speaker was Professor L. E. Z. Batz, P.E., whose subject was "Space and Gyroscope."

The Birmingham, Ala., Auxiliary have taken a very active part in Engineers' Week and have undertaken the assignment of telephoning for the men's Chapter for their monthly meetings. They report an interesting slate of activities including a trip to the new Museum of Art, a membership coffee and an interesting talk at a recent meeting by the mother of one of their members, Mrs. Framl Doar, who had just returned from a year in Rhodesia, South Africa.

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LETTERS

(Continued from page 6)

hoped that the above suggestions will be of value.

Donald H. McCoskey, P.E.
Chairman, Law and Ethics Committee, Dallas Chapter, Texas SPE,
Dallas, Texas

CONSULTING

(Continued from page 10)

tice will be trained in only one of the following eight phases: land survey, subdivision, topography, triangulation, construction, hydrography, railroad, and mineral.

• In cooperation with Representatives Sisk and Hagen of California, the Council is asking for a re-examination of the Agriculture Department directive requiring cotton acreage measurements be made by agency employees rather than private surveyors or civil engineers. Following the Council's original protest, joined in by NSPE, the Department apologized for any inference in the wording that the surveyors or engineers would act unethically in their measurements. However, in its latest letter, the Department told Rep. Sisk that it insists upon keeping the provision for agency employees only doing the measurement, as accuracy is not as important as knowledge of the program involved and proper classification of acreage.

• The Council has mailed over 4000 reprints of Robert Moses' article "Should Private Firms Plan Public Works?" to city, county and state officials in California. The article pinpoints the growing fear of socialized engineering, and requests for additional copies have been received from all over the State.

In addition to providing responsible officials with pertinent information, the mailing has achieved concrete results. The mayor of one city, after reading the article, sought advice of the Council on the question of hiring a consulting firm rather than a full-time city engineer.

GOVERNMENT

(Continued from page 13)

propriate planning and the marshaling of the nation's educational and productive capacity.

Since, the proposals declare, the development of atomic power was assisted by the energetic participation of the coordinated efforts and facilities of outstanding institutions of learning and since these institutions and their facilities as in the past stand ready to render full assistance to the Government, the conference would be restricted to representatives from such institutions. From the conference, the President would receive an outline of recommendations for a course of action for the engineering, design and development problems keyed to urgent exploration of outer space. The report and recommendation of the conferees would be made with sixty days following the meeting. (S.J. Res. 157 and H.J. Res. 604)

President Vetoes Pollution Bill

By a vote of 249 to 157, twenty-two votes short of the two-thirds majority necessary to enact the measure over the veto, the House sustained the President's opposition to a proposal to provide $900 million in Federal aid for water pollution control during the next ten years.

The vetoed bill would have authorized an increase in Federal grants to cities for aid in building sewage-treatment works from $50 million to $90 million annually, and from $500 million to $900 million in the aggregate. In addition, the present ceiling for Federal contributions would have been raised from $250,000 per project to $450,000 or 30 per cent of the over-all cost, whichever is smaller.

In his veto message, President Eisenhower characterized water pollution as a "uniquely local blight," and declared that primary responsibility for solving the problem lies not with the Federal Government but with state and local governments. "The Federal Gov-

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ernment can help," he said, "but it should stimulate state and local action rather than provide excuses for inaction, which an expanded program would do."

Federal assistance outlined by the President would consist of a four-step program:

1. A national conference to be held next December will be arranged by the Secretary of Health, Education and Welfare "to provide a forum in which all concerned can confront and better appreciate their mutual responsibility for solving this pressing problem."

2. Where the issue is of an interstate nature and the problem is beyond the powers of a single state, the Federal Government should have authority to move more quickly and effectively in directing the application of control measures that will swiftly correct pollution.

3. The Federal Government should continue to provide modest financial assistance for the administration of control programs by states and interstate water pollution control agencies.

4. The Federal Government, through research and technical assistance, can be of material help in contributing to our knowledge of water pollution—its causes, its extent, its impact and methods for its control. Increased Federal effort in this respect is provided for in the 1961 budget.

AFL-CIO

(Continued from page 39)

enjoyed by these individuals in the past.

The NSPE policy statement on aid to engineering technicians in opposing collective bargaining assumes increased significance in view of the unions' statement that the organization of technicians should in many cases precede attempt to organize engineers. The NSPE policy statement says that "NSPE should provide all possible assistance to engineering technicians requesting help to prevent their unionization where it may adversely affect the performance of the professional engineers." On the other hand, in cases where

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large numbers of engineers are employed along with technicians in a given unit, the seminar report indicates the most effective method of organization would be to begin with the senior engineers in the group.

The conclusions of the report stress that the main problem facing organized labor is not the present resistance of professional and technical employees to unionization, but rather what organization and policies should be adopted to change the attitudes and best serve the needs of these groups.

The summary admits that achievements in organizing professional and technical workers to date have been limited, and that there is no easy solution to the unionists' problem. However, in the view of the report, the manner in which organized labor has "transformed" itself in the past to meet changing conditions is proof that the organization of professional and technical employees will be accomplished.—**End.**

BOARD OF ETHICAL REVIEW

(Continued from page 42)

2 impliedly authorizes an engineer to advertise his work or merit by putting general limitations on the type of advertising which may be employed. Rule 5 specifically recognizes the right of an engineer to advertise and spells out in more detail additional restrictions and limitations.

There is no question that the engineering firms used advertising in all of the examples cited.

The first and major restriction of Section 2 is that the advertisement must not be "self-laudatory." In other words, the engineer's advertisement may not praise himself or his work.

The further language of Section 2 with reference to "conduct or practice likely to discredit or do injury to the dignity and honor of his profession" relates to the form and tenor of advertising.

Rule 5—Rule 5 dictates that only "circumspect" advertising may be employed, meaning that it must be prudent and discreet.

Rule 5 is more explicit in stating that the media to be employed should be limited to that necessary to reach potential clients and that the media shall be dignified and reputable.

Finally, the advertising itself must be limited to fact and may not tend to give the impression, directly or indirectly of discrediting or displacing another engineer.

Example 1—

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210 E. Courtland Philadelphia 20, Pa.

EMERSON VENABLE
Chemist and Chemical Engineer
Chemical Analysis
Research — Development
Trouble Shooting
6111 Fifth Ave., Pittsburgh 32, Pa.

FORREST and COTTON, INC.
Consulting Engineers
Regional Water Supplies
Water and Sewage Works
Industrial Development
Airports — Dams
Appraisals — Reports
600 Vaughn Building Dallas 1, Texas

FREESE, NICHOLS & ENDRESS
Consulting Engineers
407 Danciger Building
Fort Worth, Texas

LOCKWOOD, ANDREWS & NEWNAM
Consulting Engineers
Water Works, Sewerage & Sewage Disposal, Public Works, Structures, Earthworks, Mechanical & Electrical.
Reports—Design—Supervision
Surveys—Valuations
Corpus Christi—Houston—Victoria, Texas

FERGUSON-GATES ENGINEERING CO.
Registered Professional
Civil and Mining Engineers
Coal Property Reports — Valuation — Development — Plant Design — Ventilation
Allen Building P. O. Box 672
CLifford 2-5338 Beckley, W. Va.

to save YOU future worries and needless expense through proper Design and Supervision of Construction" is boastful, self-laudatory, and implies that the firm can render a professional service not available from others. Therefore, it is obviously not circumspect or discreet, or dignified. The words also give an impression of discrediting other engineers by using the word, "We."*

The quoted language is not a statement of fact but rather a claim.

Example 2–

The statement, "We are proud to have contributed our engineering services . . ." is objectionable for the same reasons stated under Example 1. But if it were worded similar to the following, "We have furnished engineering services in connection with the following projects in this city," it would be unobjectionable. The slogan, "Progress Through Engineering Is Our Only Product," is objectionable because it can be read as "Progress Is Our Only Product," which is not a statement of fact. However, a slogan such as "Engineering Is Our Only Service," if true, would be unobjectionable. Engineering is not considered as a "Product."

The above discussion relates only to the content of the advertisement and not its size, type or the media in which it appeared.

Example 3–

By allowing the use of the name of the engineering firm, the firm has accepted a benefit from the manufacturer which might tend to influence its impartial judgment in future engagements. Therefore, it is a practice which is ". . . likely to discredit or do injury to the dignity and honor of (the) profession." (Section 2, Canons) Section 16 and Rule 27, while not entirely applicable, indicate that their spirit is being violated in that it creates a situation in which there might be a conflict of interest. The practice of using pictures of firm members under these circumstances also raises a question of propriety and dignity. There is no objection, however, to having a proper credit line for the work of consulting engineers on a particular project in a company-sponsored advertisement; such credit lines are, in fact, encouraged as a proper recognition for the professional services of the consulting engineer.

Conclusion:

The three advertisements are unethical to the extent indicated and for the reasons given.

Approved by the Board of Ethical Review at their meeting in Washington, D. C., December 11, 1959.

L. R. Durkee, P. E.
Phil T. Elliott, P. E.
Pierce G. Ellis, P. E.
Wylie W. Gillespie P. E.
Marvin C. Nichols, P. E.
Ezra K. Nicholson, P. E.
Murray A. Wilson, P. E.
Chairman

* Messrs. Wilson, Durkee, and Nichols question the propriety of the slogan, "Sound Low Cost Structures Start With Good Design," and further suggest that the entire advertisement violates Rule 6 regarding telephone listings because the spirit of Rule 6 should apply to advertisements as well as listings in the telephone book. The other members of the Board believe that Rule 6 must be read in its present form as applying only to listings. Also, the other members believe that inasmuch as advertising is permissible that telephone book advertisement should not be singled out for special treatment.

Supplemental Services

Subsurface Investigations

WARREN GEORGE
Henry D. Hammond, P. E.

Any Type Borings — Any Site
Preliminary Surveys — Reports

95 River St. — **Hoboken, N. J.**

GILES
DRILLING CORPORATION

Subsurface Explorations
Large Calyx Holes in Rock
Engineering Geology Reports

2 Park Avenue — **New York 17, N. Y.**

CONSULT
THIS
DIRECTORY
FOR
YOUR
NEEDS

SPRAGUE & HENWOOD, INC.
Drilling Services
Foundation Investigations, Test Boring
Grout Hole Drilling and Pressure Grouting
Diamond Core Drilling
221 W. Olive St., Scranton, Pa.
New York, Phila., Pittsburgh, Atlanta
Grand Junction, Colorado
Buchans, Newfoundland

PENNSYLVANIA
DRILLING COMPANY

Subsurface Explorations • Grouting
Industrial Water Supply • Mineral Prospecting
Large Diameter Drilled Shafts

1205 Chartiers Ave. — **Pittsburgh 20, Pa.**

AERIAL MAP SERVICE CO.

Topographic, Planimetric, Photo Maps for Highways, Mining, Resources, Construction. City Maps, Tax Maps, Photo Geology. Tellurometer Radio Distance Measurements, Triangulation, Electronic Computation.

1016 Madison Ave. — **Pittsburgh 12, Pa.**

AMERICAN AIR SURVEYS, INC.

Aerial Topographic Maps & Aerial Photos for

• Highways • Airports • Power & Pipe Lines • Railroads • Mining • All types construction • Stockpile Inventories

A Nationwide Service

907 Penn Ave. — **Pittsburgh 22, Pa.**

ENGINEERS

Put your card here

Keep your name before more than 60,000 readers. It's good business

take advantage of AE s' readers' service department now!

With this convenient, self-addressed envelope, AE readers can easily obtain additional information on advertisers' products and services. It's easy to use this free service—simply circle the numbers on the reverse side of this sheet, drop the cutout envelope in the mail, and within days you will receive the information requested. Hundreds of our readers take advantage of this offer every month—why don't **you**?

► CLIP COUPON—**Fold Along This Line—Fasten (Staple, Tape, Glue)**—MAIL ◄

FIRST CLASS
PERMIT NO. 3036-R
Washington, D. C.

BUSINESS REPLY ENVELOPE
No Postage Stamp Necessary If Mailed In The United States

POSTAGE WILL BE PAID BY

AMERICAN ENGINEER
2029 K STREET, N. W.
WASHINGTON 6, D. C.

FASTEN HERE ONLY ▶ ◀ **FASTEN HERE ONLY**

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For Your Convenience . . .

ASCE's EXPANDED Readers' Service Department!

Now it is easier than ever for you to get information f-a-s-t on new products and services. The other side of this page when folded makes a *self-addressed reply envelope* that is all ready to come back to us. All you have to do to use it is to first read the advertisements, and the "Progress in Products" and "New Literature" features in every issue, noting that each makes specific reference to numbers on the form below.

Then if you want more information about any item, simply circle the corresponding number on the form, sign, fold, fasten and MAIL TODAY!

We do the rest. And within days, the data and literature you want is on its way to you.

Take advantage of this FREE service. Use this handy envelope NOW!

April, 1960

Please have information sent to me on items circled below:

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40 Pgs. 2-3

Additional Remarks: .....

.....

My Name ..... **Title** .....

Company Name .....

Address .....

City ..... **Zone** ..... **State** .....

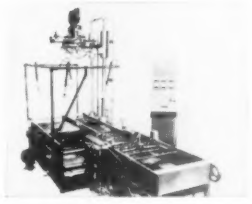
Progress in Products

DOOR UNIT — Item 30

A completely-assembled aluminum door unit has been introduced for national distribution by Manitou Manufacturing Company. The aluminum unit consists of a door frame, threshold, inside trim, weatherstrip, pin tumbler lock, and nailing flanges or masonry clips. Any type of door can be used with the unit. The complete unit, including the door itself, can be installed within fifteen minutes.

MICROFILMING — Item 34

The de Florez Company, Inc., has announced a new high-speed machine for microfilming engineering drawings. The machine continuously feeds drawings from a pile, registers them, conveys them under the camera, adjusts the illumination to the proper level, photographs the drawings, and discharges them to a delivery pile. Sheets up to 22″ x 34″ are handled by the machine, as are roll drawings up to 42″ wide.



WALL-TYPE FILE — Item 31

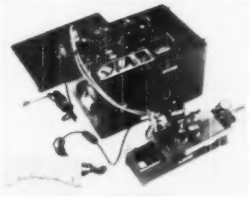
Lewbill Industries, Inc., has announced it is now manufacturing a new patented wall-type file for handling and storage of blueprints, drawings and other large sheet materials. Known as the Martin Sheet File System this unit allows the user to work with a large number of prints more efficiently and neatly because each sheet hangs flat, requiring less storage space and eliminating curl. Construction is of a steel tube frame hinged to a plywood mounting panel, with locking hinge support arms. Rubber-tipped lock-clips are used to mount sheets in the clamp hangers. Many prints can be clamped firmly in each hangar and may be easily removed at any time, it is claimed.

PANELCOILS — Item 35

Dean Products, Inc., is now offering their Dean Panelcoil in *five standard* widths, ranging from 12″ to 29″ wide. All five standard widths can be made to exact length requirements up to 143″. New 29″ width is a *full seven inches wider* than the previous 22″ industry maximum. This extra width makes it possible in many cases to reduce the actual number of Panelcoils required for a given heating or cooling job, says the manufacturer. Result—fewer fittings, less connecting pipe, and most important of all—less labor, it is claimed.

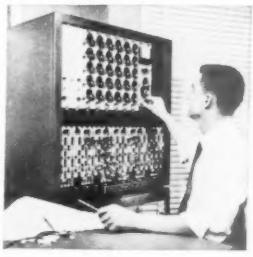
GEAR TESTER — Item 32

Scherr-Tumico Co. has introduced an Electronic Gear Tester using the Sanborn Electronic Recorder coupled with either the Scherr 2″ Gear Tester, the Scherr 5″ Gear Tester of the Parkson 9″ & 15″ Gear Testers. The same electronic recorder can be used on any of the above gear testers simply by mounting a transducer on the gear tester. A separate transducer is required for each gear tester.



'DESKTOP' COMPUTER — Item 36

Grandson of the familiar "console" type analog computer, a new desktop unit brings problem-solving facility to the fingertips of today's research engineers, according to Applied Dynamics, Inc. In addition to its low cost to small research firms across the nation and its expandability to handle more complex problems, the "Ad-1 Electronic Differential Analyzer" offers large firms a chance to de-centralize their computation facilities, the manufacturer claims.



ALUMINUM SHEET — Item 33

Room dividers. Solar shades. Ceiling panels. These and a host of other aluminum products will benefit from a new line of colorful, three-dimensional sheet from Aluminum Company of America. The unique line includes four designs —Offset, Baguette, Regent, and Egyptian. Each has its own classic pattern. The Egyptian design features alternate raised and depressed pyramids; the Baguette, a flat-top perforated design; the Regent, a round perforation; and the Offset, a large vented design.

INDUSTRIAL DRIVES — Item 37

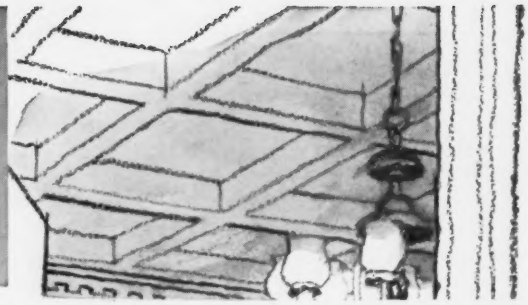
Users of industrial drive systems are being offered a completely new engineering service, providing them an unbiased selection of drives at an economical cost, according to the General Electric Company. A comprehensive line of electric, mechanical and electronic adjustable speed drives, said to be "the most complete line available, bar none," is the reason behind the new service, say G. E. officials. The complete line represents a range of ¼ to 1250 horsepower, 2 to 6000 revolutions-per-minute (rpm) and a speed range up to 200:1.

This feature describes new products of general interest to professional engineers. For further information, circle the item number in the Readers' Service Dept. and mail to AMERICAN ENGINEER.

These listings are informational and are not an endorsement of the products, nor of the manufacturer's claims.

EUGENE B POWER
EDITORAL DEPT-UNIV MICRO-
313 N 1ST ST FILMS IN
ANN ARBOR MICH
COMP T 71555 31

"We were taking the plan for granted"



"You know, Ed, it's so easy to take these things for granted. I knew we'd put in the Payroll Savings Plan a long time ago. So I just assumed we had a good, sizable number of our employees who were buying U.S. Savings Bonds regularly.

"Well, last week our chairman asked me for the exact figures. When I checked up I found we had less than a third of our people making regular use of the Plan. We needed to have someone explain—in person—the convenience and soundness of this fine thrift program.

"I contacted our State Savings Bonds Director right away. With his quick, friendly help we set up a thorough canvass of everybody on the staff. We found that many of our company family were just waiting to have someone tell them how simple it is to share in this sound, systematic thrift plan. Then the polite suggestion, 'And why not start now?' really did the work. Today we have a participation we're proud of, and we're taking steps to increase it still more, every payday."

Experience of leading companies shows that spreading Payroll Savings information through the organization, person-to-person, results in quick increases in participation. And that brings such welcome benefits as lower employee turnover, better safety records and the keen satisfaction of helping your people to contribute to our Nations Peace Power.

ALL U.S. SAVINGS BONDS—OLD OR NEW—EARN ½% MORE THAN BEFORE

The Magazine of the Registered Professional Engineer